

**Final Programmatic Environmental Assessment (PEA)
For Typical Recurring Actions Resulting from Fire
Disasters in California as Proposed by the
Federal Emergency Management Agency**



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1.1 Program Background

The Federal Emergency Management Agency (FEMA) proposes to administer federal disaster assistance pursuant to the Robert T. Stafford Disaster Relief and Emergency Assistance Act, PL 93-288, as amended (the Act), and its implementing regulations in Title 44, Code of Federal Regulations (CFR), Part 206 (Federal Disaster Assistance).

The National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR Parts 1500 through 1508), and FEMA regulations for NEPA compliance (44 CFR Part 10) direct FEMA and other federal agencies to fully understand and take into consideration during decision making, the environmental consequences of proposed federal actions (projects). Therefore, FEMA must comply with NEPA before making federal funds available for disaster recovery and mitigation actions.

FEMA has determined through experience that the majority of the typical recurring actions proposed for funding, and for which an Environmental Assessment (EA) is required, can be grouped by type of action or location. These groups of actions can be evaluated in a Programmatic Environmental Assessment (PEA) to comply with NEPA and its implementing regulations without having to produce a time-consuming stand-alone EA for every action.

Two FEMA programs fund these actions (projects): the Public Assistance Program and the Hazard Mitigation Grant Program (HMGP). The Public Assistance Program (Act Section 406) provides assistance to local governments and private nonprofit organizations (PNPs) to help them respond to and recover from a disaster. The HMGP (Act Section 404) provides communities with cost-share funds for projects that can help reduce all future disaster-related property damages and loss of human lives.

1.1.1 Public Assistance Program

Many Public Assistance Program projects consist of restoring facilities to predisaster conditions. When these projects are on the same site as the damaged facility and conform substantially to the predisaster design, they are “statutorily excluded” or exempted from further NEPA review and documentation, per Act Section 316. Other Public Assistance Program projects that are considered “Statutory Exclusions” include debris removal and actions to protect lives and property from immediate threats.

Similarly, several types of Public Assistance Program projects are “categorically excluded” (CATEXd) from preparation of an EA or Environmental Impact Statement (EIS). FEMA’s list of “Categorical Exclusions” (CATEXs) is in 44 CFR 10.8(d). These categories of projects were determined to typically have no significant environmental impact. Categorically excluded Public Assistance Program projects generally include acquisition (buyout), relocation, demolition, and small-scale hazard mitigation construction, but have conditions that minimize the potential effects on the environment. When these conditions are not met or when “extraordinary circumstances”

(44 CFR 10.8(d)(3)) exist, which makes the project atypical of other projects in the exclusion category, the CATEX does not apply and an EA must be prepared.

Because the California Office of Emergency Services (OES) coordinates FEMA's disaster assistance funding, the local agency or applicant is referred to as the subgrantee. Often the subgrantee wishes to take advantage of the opportunity presented by the necessary repair of a disaster-damaged facility to make improvements to or change the design of the facility. These actions are referred to as "improved projects." Also in some cases the subgrantee determines that the public welfare would not be best served by restoring a damaged facility or the function of the facility. Funds originally available for the restoration of the damaged facility may be made available for the expansion or construction of other selected facilities, purchase of capital equipment, or funding hazard mitigation measures. Such actions are known as "alternate projects." In addition, mitigation projects are funded through the Public Assistance Program to prevent or ameliorate future disaster damage.

Improved, alternate, and mitigation projects do not qualify for Statutory Exclusions and often require NEPA review at the EA level and occasionally at the EIS level. The determination of site-specific alternatives and details are more within the subgrantee's decision-making process than FEMA's because of the subgrantee's knowledge of the community's needs and preferences, previous disasters, and other local issues. In addition, FEMA is usually the last agency to review the project in the approval process under the current process. Before implementation of the PEA, FEMA has had difficulty complying with the spirit and intent of NEPA because typically the action has been well defined, evaluated, and designed before any input from FEMA. Use of the PEA is expected to help facilitate alternative development because projects are not as likely to be predetermined by the applicant. Nonetheless, local applicants are responsible for designing and selecting projects to be funded under the Public Assistance Program.

1.1.2 Hazard Mitigation Grant Program

The HMGP projects differ from Public Assistance Program mitigation projects because of their funding source. These projects are generally larger in scope and cost than Public Assistance mitigation projects. Although no Statutory Exclusions exist for HMGP projects, the CATEXs described for the Public Assistance Program also apply to HMGP projects. Examples of CATEXs for HMGP projects include: (1) acquisition of properties and associated demolition or removal of structures when the action has a willing seller, a buyer who coordinated with affected authorities, and a deed restriction that the acquired property remain as open-space use in perpetuity; (2) physical relocation of individual structures where FEMA has no involvement in relocation site selection or development; and (3) repair, reconstruction, restoration, elevation, retrofitting, upgrading, or replacement of a facility in a manner that substantially conforms to the predisaster design, function, and location. When specific conditions are not met or when extraordinary circumstances exist, the CATEX is not applicable, and an EA must be prepared. Similar to the Public Assistance Program application process, the HMGP application process requires the subgrantee to send its application to OES, which evaluates and prioritizes all

applications before sending the applications to FEMA for review. FEMA funding is also sent to the applicant through OES.

Many HMGP projects require an EA because they do not meet the criteria of applicable CATEXs. Subgrantees often conduct their own environmental reviews in association with obtaining permits to comply with state and/or federal environmental laws and other statutes. By the time a project is sent to FEMA, the project has already been defined, and costs, as well as some potential impacts, have been determined, and available alternatives are limited. As discussed for the Public Assistance Program, use of the PEA will help facilitate alternative development for HMGP projects. Nonetheless, local applicants are responsible for designing and selecting projects to be funded under the HMGP.

1.2 Purpose and Scope of the Document

The purpose of this document is to facilitate FEMA's compliance with NEPA by providing a framework to address impacts of projects typically funded in response to fire disasters and to prevent future fire disasters. This document is not intended to serve as a guide to subgrantees for vegetation management techniques.

This PEA discusses the potential environmental impacts from implementing various project alternatives fully or partially funded by FEMA while administering fire disaster assistance in the State of California (California). This PEA also provides the public and decision-makers with the information required to understand and evaluate these potential environmental consequences. Project- or site-specific information will be required to fully evaluate potential impacts; therefore a site-specific Supplemental Environmental Assessment (SEA) will be prepared for each project, as described in Section 1.3. In addition to meeting these goals of impact identification and disclosure, this PEA addresses the need to streamline the NEPA review process in the interest of FEMA's primary mission of disaster response.

This PEA applies immediately to all projects described in Section 2 of this document that have been proposed for FEMA funding under all open previously declared fire disasters in California. Open declared disasters are defined as disasters for which FEMA is still providing federal assistance under the Act. This PEA also applies to subsequent fire disasters to be declared by the President, when FEMA so notifies the participating interested public and government parties and agencies.

The description of proposed actions by project type and alternative action category is provided in Section 2 (Description of Proposed Actions and Alternatives).

1.3 Programmatic Process

This PEA covers typical actions that are eligible for FEMA funding via implementing the Act and that provide fire disaster assistance in California. Because actions proposed for funding under this PEA and impacts of these actions can vary based on location, purpose of project, and other site-specific criteria, an SEA and corresponding FONSI will be issued for each individual project

covered by this PEA, assuming impacts can be kept below significant levels. The resulting SEA will tier off this PEA, in accordance with 40 CFR Part 1508.28. Projects for which it has been determined, during the preparation of the SEA, that a more detailed environmental review is required, or projects that do not fit into the typology included in this PEA, will be subject to the standard EA or EIS process as required by NEPA. A sample SEA is in Appendix B. Although this example SEA is for a flood disaster, the format and content of an SEA for this PEA will be similar.

This PEA should apply to most actions proposed for FEMA funding as a result of fire disaster damage in California. The analysis in this PEA has relied upon FEMA's historic experience of project typology, description, and consequences described in environmental documents (CATEXs and EAs) from 1994 to 1998. Analysis in this PEA is also based on review of scientific literature, consultation with regulatory agencies, and expert opinion.

Cumulative impacts are defined as the impact on the environment which results from the incremental impact of the action when added to the other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts are not addressed in this PEA because analysis of these impacts requires specific knowledge of other projects occurring within or near the study area. Based on the scope of this PEA, such information cannot be determined since the study area is statewide. Cumulative impacts will be addressed in each project-specific SEA.

1.4 Purpose of and Need for Action

FEMA's objectives, with respect to public assistance and hazard mitigation from fire disasters, are to repair or replace damaged public facilities; reduce the risk of future fire loss; and minimize fire impacts on public safety, health, and welfare.

Without FEMA action, many individuals and communities would not have the resources to rebuild or relocate fire-damaged homes, businesses, and public facilities. Necessities such as homes, businesses, and schools would not be functional after fire disasters. Furthermore, many fire protection measures would not be improved or constructed without FEMA action, resulting in no reduction of injuries and loss of lives and property from future fires.

1.5 Complementary Programmatic Documents

1.5.1 Endangered Species Act

Section 7 of the Endangered Species Act of 1973 requires FEMA to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) if proposed FEMA-funded projects may affect threatened and endangered (T&E) species and/or their suitable habitat. California has more than 200 federally listed T&E species. To consolidate and streamline the Section 7 consultation process, FEMA Region IX has implemented a Formal Programmatic Consultation (FPC) with the USFWS that covers typical actions proposed for FEMA funding for several types of disasters, including fires.

Instead of consulting on each individual project, the FPC allows consultation for projects grouped and analyzed together by either project type or location. The result of the FPC is the issuance of a Programmatic Biological Opinion (PBO) and Programmatic Incidental Taking Statement (PITS) by the USFWS. This opinion includes certain avoidance and/or mitigation measures (“Terms and Conditions” of the PITS) during project implementation to reduce adverse impacts on T&E species. Appendix C contains copies of the FPC, PBO, and PITS for a previous disaster in California. FEMA is in the process of consulting with the USFWS so that the FPC, PBO, and PITS are standardized for future disasters.

1.5.2 National Historic Preservation Act

“Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires a federal agency with jurisdiction over a federal, federally assisted, or federally licensed undertaking to take under account the effects of the agency’s undertaking on properties included in or eligible for the National Register of Historic Places (NRHP) and, prior to approval of an undertaking, to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on the undertaking” (36 CFR Part 800.1a).

To streamline the Section 106 review process, FEMA has implemented a disaster-specific Programmatic Agreement (PA) for each recent disaster. The fully executed PA for a previous disaster is attached as Appendix D. Recently, FEMA has been working on a State Model PA that applies to all FEMA undertakings (actions or projects) in each participating state. The State Model PA would identify specific actions that are considered exempt from Section 106 review and encourage the active involvement of the State Historic Preservation Officer (SHPO) to expedite identification of historic properties and effects.

To further streamline the review process, disaster-specific Programmatic Memoranda of Agreement and Programmatic Standard Mitigation Measures are currently under consideration between FEMA, the ACHP, and the SHPO. Similar to the programmatic documents implemented under the Endangered Species Act, they will address potential impacts by group and type of action, providing clearance under the NHPA without having to prepare extensive documents or undergo individual consultation for each project.

1.6 Public Participation Process

In addition to the Cumulative Public Notice published at the Presidential declaration of each disaster subject to this PEA, the Draft PEA has been circulated to the interested public and government agencies for review and comment. A list of agencies, individuals, and organizations that received copies of the Draft and Final PEAs is in Appendix E. Letters received from agencies, individuals, and organizations as a result of the public review process are included as Appendix F. Public comments received during the public review of the Draft PEA have been incorporated into this Final PEA, as appropriate.

Public notification will occur for individual projects covered by this PEA. Depending on the scope and impacts of projects, public input may be solicited before preparation of SEAs or based

on review of Draft SEAs. Public involvement will be conducted in accordance with CEQ requirements (40 CFR Part 1506.6) and Executive Order (EO) 11988 and EO 11990, when applicable. Public scoping meetings may be held when summarizing the findings of the analysis and soliciting input from the affected public and governmental agencies are advised or required, (e.g., compliance with EO 11988).

Responses to comments offering new information or changes to data concerning environmental impacts will be included and circulated, as necessary. Comments stating opinions or facts irrelevant to impact analysis, although appreciated, will not solicit specific responses. Appropriate methods and levels of outreach to minority and low-income populations have been, and will continuously be, conducted regarding environmental justice issues.

1.7 Relationship of the Document to the California Environmental Quality Act

According to CEQ's NEPA-implementing regulations (40 CFR 1500.4), federal agencies must reduce excessive paperwork when complying with NEPA. Methods to attain this goal include incorporating material by reference, integrating NEPA requirements with other environmental review and consultation requirements, and eliminating duplication with state and local documents by preparing joint documents. Therefore, FEMA and subgrantees cooperate to incorporate NEPA and California Environmental Quality Act (CEQA) documents by reference and prepare joint documents whenever practicable. In many cases, this cooperation consists of the subgrantee referencing the PEA, as appropriate and adding project-specific information and impact analysis into the CEQA document. FEMA then completely references the CEQA document and all other relevant environmental studies in preparing of the SEA. In some instances, the CEQA document and the SEA could be combined into a joint federal-state SEA.

1.8 Organization of the Document

This PEA is organized into the following chapters and technical appendices:

- Chapter 2 describes project types and programmatic alternative actions. Chapter 2 also briefly discusses alternatives eliminated from further consideration, and concludes with a comparative summary of the effects of alternative actions on the local community and the natural environment.
- Chapter 3 describes the affected environment, providing a basis for measuring the impacts of the alternative actions for each project type. The baseline is needed for analytical comparisons. The baseline year for this PEA is 1995/1996. Specific sections may use different baseline years depending on data availability (e.g., population data for last census in a specific area, or database for T&E species available from the USFWS).
- Chapter 4 describes potential environmental consequences of implementing the alternative actions. This chapter forms the basis for the Impact Summary Matrix at the end of Chapter 2.
- A list of references is provided in Chapter 5.

In addition to the PEA main text the following appendices are included:

- Appendix A: List of Acronyms and Abbreviations Used in the Programmatic Environmental Assessment
- Appendix B: Example of Supplemental Environmental Assessment
- Appendix C: Example of Formal Programmatic Consultation, Programmatic Biological Opinion, and Programmatic Incidental Taking Statement under Section 7 of the Endangered Species Act
- Appendix D: Example of Programmatic Agreement under Section 106 of the National Historic Preservation Act
- Appendix E: List of Agencies, Individuals, and Organizations to Receive Copies of Draft and Final Programmatic Environmental Assessments
- Appendix F: Letters Received from Agencies, Individuals, and Organizations

2 DESCRIPTION OF PROPOSED ACTIONS AND ALTERNATIVES

2.1 Introduction

This section describes typical projects executed with fire disaster assistance and explains alternative actions, including the proposed action and the no action alternative. Other alternatives that were identified but eliminated from further consideration are briefly described. The potential environmental impacts of each alternative are summarized in the Summary Impact Matrix (Table 2-1) and described in Chapter 4. It should be noted that the level of funding available for each project is highly variable depending on the type of program, project location, and other circumstances and contingencies. Furthermore, funding may be specific to individual situations. Projects are described independent of the source of funding (HMGP or Public Assistance Program).

2.2 Project Types

Three categories of fire-hazard reduction projects have been developed based on past fire disasters. Classifying local agencies' proposed actions into one of these categories is necessary to develop alternatives and identify potential environmental impacts.

All alternatives considered in this PEA assume that FEMA action is required as a result of a major disaster declaration, administration of the Act, and implementing regulations in 44 CFR Part 206. Furthermore, each action is assumed to comply with the Act and FEMA's implementing regulations.

The following sections describe the three typical project types implemented for fire disasters.

2.2.1 *Vegetation Management*

These projects are normally designed to reduce excess vegetation growth where undeveloped and urban areas converge. The majority of vegetation management plans implement fuelbreak systems. Other projects include the creation of demonstration areas used to educate the public about fire-hazard reduction. These projects are described in more detail in Section 2.5.1.

2.2.2 *Fire-Prone Buildings, Roads, and Utilities*

Fire disasters are often worsened because of the presence of flammable materials used in building construction. These projects include actions to reduce fire risk to buildings. Projects can include educational programs or the use of fire-resistant materials when rebuilding structures. In addition, roads may require improvement or new construction to provide better access of emergency vehicles to fire locations. These projects are described in more detail in Section 2.5.2.

2.2.3 *Water Storage and Supply*

The objective of these projects is to increase water storage and supply used for fighting fires, which can include installation of fire hydrant systems and irrigation systems. As with the other

categories, these projects can also include educational programs. These projects are described in more detail in Section 2.5.3.

Additional projects associated with fire disasters are likely to be funded by FEMA; however, the three types mentioned above are the most common. Any other projects that do not qualify for categorical or statutory exclusion would require an EA or EIS.

2.3 Alternative Action Categories

As part of this PEA, five alternatives will be considered for each of the three project types described in the previous section. The level of activity involved in implementing the proposed project differentiates these alternatives.

2.3.1 *No Action Alternative*

Inclusion of a No Action Alternative in the environmental analysis and documentation is required under NEPA. The No Action Alternative is defined as maintaining the status quo with no FEMA funding for any alternative action. For projects otherwise determined eligible for FEMA funding under the HMGP and the Public Assistance Program, the No Action Alternative is in conflict with FEMA's mission and the purpose of the programs. For these reasons, the No Action Alternative evaluates the effects of not providing eligible assistance for each specific project, thus providing a benchmark against which project action alternatives may be evaluated.

Under this alternative, structures may be repaired to predisaster conditions with public or private funds, including insurance payments. Facilities that are not repaired would be used in damaged condition or abandoned. For the purpose of this alternative, it is assumed that local governments would be unable to implement the proposed project for lack of federal assistance, and a fire hazard would remain unmitigated at the project site.

Although FEMA would not fund any action under this alternative, many structures would be repaired to predisaster conditions. Facilities that are not repaired would be used in damaged condition or abandoned. If local governments were unable to implement the proposed project for lack of federal assistance, a fire hazard would remain unmitigated at the project site.

2.3.2 *Low-Intensity Alternative*

This category consists of small-scale projects which are generally less intrusive than alternatives. These projects consist of public information and education programs and relocation of facility functions to avoid major new construction.

2.3.3 *Improvement Alternative*

This category of alternatives consists of improving existing structures or systems to better perform their functions. Improvements also mean upgrading structures or systems to ensure continuity of the functions performed in them or by them. This alternative, for example, would consider expansion of existing firebreaks or increase in water storage capacity for fire suppression.

2.3.4 *New Activity Alternative*

This alternative consists of new construction of a facility or implementation of a new system. Examples include constructing a facility outside of a high fire hazard area or establishing a new fuelbreak.

2.3.5 *Combined Alternative*

For this alternative, mixed solutions of different alternative actions or project types are combined. An example is constructing a fire access road and providing public education in the community.

2.4 Alternatives Eliminated from Further Consideration

Alternatives usually dismissed from further consideration in any of the environmental documents are those that require considerably more funding than available through FEMA programs or those that do not pass a cost-benefit analysis. Other alternatives usually eliminated, after proper review and analysis, are those dismissed or rejected by the applicant for various reasons or for incompatibility with local and state statutes.

The SEA for each project will address alternatives eliminated from further consideration, if any, and the justifications for rejection.

2.5 Description of Alternatives, Including the Proposed Action and the No Action Alternative

The proposed action is typically the alternative that has been proposed by the subgrantee as its preferred alternative. The proposed action and alternatives rely on the knowledge and experience of the local agency to determine projects that are best suited to the community's requirements and preferences. Proposed actions and alternatives have been designed by subgrantees to meet specific needs at the project areas. FEMA encourages subgrantees to solicit assistance from local fire management experts, biologists, and other scientists when designing alternatives. More detailed descriptions of the proposed action and alternatives will be provided in each project-specific SEA.

General descriptions of the alternatives follows.

2.5.1 *Vegetation Management for Fire-Hazard Reduction*

2.5.1.1 *No Action Alternative*

On private properties, vegetation may be cleared by some property owners; however, coordinated vegetation management projects would not be implemented. On public properties, local agencies may continue to implement existing maintenance plans; however, FEMA funding would not be available to conduct vegetation management projects required to adequately reduce fire hazards.

Fire-damaged structures may be repaired or rebuilt. Public facilities and PNPs may be repaired to predisaster conditions under the Public Assistance Program. Property owners, in addition to local governments and PNPs that do not qualify for Public Assistance Program funding, would rely on

insurance payments or other available financial assistance to repair damaged structures. Facilities that are not repaired or rebuilt would be used in damaged conditions or abandoned. Retrofitting structures with fire-resistant materials may occur on some structures; however, coordinated fire-hazard reduction projects would not be implemented. Also, road access to project sites would not be improved.

FEMA funds would not be used to reduce the fire hazard at the project site; therefore a fire hazard may remain unmitigated.

2.5.1.2 Low-Intensity Alternative

This alternative for vegetative management consists primarily of public information and education. A fire-safe demonstration area is the most common form of public education project. These projects generally entail the construction of educational centers in high fire-hazard areas to educate property owners to prevent and reduce the risk of fires to their homes and properties. These projects frequently include building a structure with fire-resistant materials and a fire-suppression system, landscaping the grounds with fire-resistant vegetation at appropriate distances from the structure, installing a water-conserving irrigation system, and conducting proper maintenance. Docent-led tours would allow visitors to learn more about fire-resistant building construction and landscaping. Other types of public education include producing and distributing brochures, fliers, and videos or conducting informational seminars or demonstrations on fire-hazard reduction techniques.

2.5.1.3 Improvement Alternative

These types of projects include expanding existing fuelbreaks (firebreaks) or fuel reduction zones. For the purpose of this document, fuelbreaks are corridors where all vegetation has been removed. The purpose of a fuelbreak is to reduce the extent of fire and to provide a location for firefighters to work safely and effectively. Fuelbreaks are occasionally compacted or graded for use as fireroads.

Unlike fuelbreaks, fuel reduction zones (also called shaded fuelbreaks) have some vegetation. Fuel reduction zones differ from untreated forested areas because, in the former, low- and mid-height vegetation has been removed or reduced and the density of mature trees has been reduced. The purpose of fuel reduction zones is to reduce the speed with which a fire spreads and to create a safer environment for fire fighters. To create fuel reduction zones, dead or diseased trees would be removed along with high-ignition-potential species, such as eucalyptus or Monterey pine. Low- and mid-height individual plants and limbs would be removed or reduced to minimize fire ladders—vegetation that permits fire to travel from the understory to the canopy. The canopy and understory would then be thinned until the appropriate density of vegetation is reached.

These types of vegetation management projects can be accomplished with controlled burns, mechanical equipment, hand treatment, grazing, and chemical treatment. Controlled (or prescribed) burns are often used in combination with mechanical equipment, grazing, or hand treatments to reduce the potential for an escaped fire. Some controlled burns occur after vegetation has already been downed and, occasionally, crushed to make for a more efficient fuel.

Mechanical equipment includes the use of vehicles to crush, cut, or uproot vegetation. Hand treatments utilize chainsaws, axes, and hoes to cut or uproot vegetation. Vegetation downed as a result of mechanical or hand treatment would be burned on site, chipped and spread on site, or removed from site. Herbicides and other chemical treatments would only be used as maintenance to prevent future growth in areas already treated by burns, mechanical equipment, grazing, or hand. Frequently, areas treated by any of these methods are revegetated with locally occurring, native California, fire-resistant species.

The subgrantee would be responsible for the maintenance of fuelbreaks and fuel management zones. Therefore, subgrantees are encouraged to select projects that require little or no future maintenance.

2.5.1.4 New Activity Alternative

This alternative would consist of creating new fuelbreaks or fuel reduction zones or residential clearing projects. Processes for creating new fuelbreaks or fuel reduction zones are described in Section 2.5.1.3. Residential clearing projects consist of removing vegetation that contacts, overhangs, or otherwise encroaches on residential structures. These projects would be conducted by mechanical or hand treatments, as described in Section 2.5.1.3.

2.5.1.5 Combined Alternative

This alternative would consist of combinations of alternative actions, combinations of project types, or combinations of both. An example of combining alternative actions is expanding an existing fuelbreak and conducting residential clearing by mechanical and hand treatments.

2.5.2 Fire-Prone Buildings, Roads, and Utilities

2.5.2.1 No Action Alternative

Activities likely to occur under the No Action Alternative are described in Section 2.5.1.1.

2.5.2.2 Low-Intensity Alternative

Under this alternative, the function of the fire-prone facility would be relocated to an existing facility that has adequate capacity to handle the additional load with minor modifications, if any. For structures, the occupants and materials would be relocated to alternate structures; traffic would use alternate routes; and utility services would be provided by alternate methods. This action would not entail any major physical construction or addition to the existing facility and, if any work would be required, it would consist of only minor modifications. A typical example is transferring students from a damaged or fire-prone school to a suitable existing school nearby, when feasible in terms of capacity and convenience for students, families, and teachers. For properties in high fire-hazard areas, FEMA would acquire properties, demolish existing structures, and conduct vegetation management on the site of demolished structures (as described in Section 2.5.1.3).

2.5.2.3 *Improvement Alternative*

The Improvement Alternative for these types of projects would consist of improvements to existing structures and facilities to reduce their vulnerability to fires or to increase their capacities to fight fires. Examples includes replacing roofs, doors, and other building materials with fire-resistant materials or improving the interior of a structure, such as installing fire alarms or fire sprinklers. The alternative would also include improving roads in high fire-hazard areas to provide better access for fire-fighting personnel and equipment or improving a fire station by adding an additional garage.

2.5.2.4 *New Activity Alternative*

The New Activity Alternative consists of the construction of new facilities. Alternatives could include relocating houses or fire stations from high fire-hazard areas or building new fire stations. Components of this action could consist of demolishing existing structures, conducting vegetation management on the existing sites (as described in Section 2.5.1.3), acquiring properties for the relocated houses, installing utilities, and constructing new structures. Alternatively, this option could include the construction of new roads for better access to high fire-hazard areas.

2.5.2.5 *Combined Alternative*

This alternative would consist of combinations of alternative actions, combinations of project types, or combinations of both. An example of combining alternative actions is constructing a new fire station and improving fireroads.

2.5.3 *Water Storage and Supply*

2.5.3.1 *No Action Alternative*

Activities likely to occur under the No Action Alternative are described in Section 2.5.1.1.

2.5.3.2 *Low-Intensity Alternative*

This alternative would consist of public education, such as the construction of a fire-safe demonstration project. Components of this alternative are described in Section 2.5.1.2.

2.5.3.3 *Improvement Alternative*

The Improvement Alternative for these types of projects would consist primarily of improvements to existing structures and facilities to increase water availability for fire fighting. Examples of this type of project would be extending water lines for a fire hydrant system, increasing the capacity of a reservoir or a retention basin used for fire suppression, or expanding a fire-suppression system.

2.5.3.4 *New Activity Alternative*

This alternative would include installation of fire hydrant systems and installation of water tanks, reservoirs, and retention basins.

2.5.3.5 *Combined Alternative*

This alternative would consist of combinations of alternative actions, combinations of project types, or combinations of both. An example of combining alternative actions is building a public demonstration garden, installing a fire hydrant system, and increasing the capacity of the water supply system.

2.6 Comparison of Environmental Impacts

A summary comparison of the influencing factors and environmental impacts, along with programmatic mitigation measures, is in Table 2-1. Environmental impacts are described briefly in the summary table and discussed at length in Chapter 4.

Table 2-1
Impact Summary Matrix

	Vegetation Management	Fire-Prone Buildings, Roads, and Utilities	Water Storage and Supply
Description of Alternative	<p><u>2.5.1.1 No Action:</u> Property owners may clear vegetation and fire-damaged structures may be repaired. No FEMA funding for coordinated project.</p> <p><u>2.5.1.2 Low-Intensity:</u> A fire-safe demonstration area would be constructed for public information and education. Alternatively, brochures, fliers, and videos would be developed and distributed.</p> <p><u>2.5.1.3 Improvement:</u> Firebreaks or fuel reduction zones would be expanded. These projects would be accomplished with controlled burns, mechanical equipment, hand treatment, grazing, and chemical treatment.</p> <p><u>2.5.1.4 New Activity:</u> Firebreaks or fuel reduction zones would be created. These projects would be accomplished with controlled burns, mechanical equipment, hand treatment, grazing, and chemical treatment.</p> <p><u>2.5.1.5 Combined:</u> Alternative actions and/or project types would be combined.</p>	<p><u>2.5.2.1 No Action:</u> Same as 2.5.1.1.</p> <p><u>2.5.2.2 Low-Intensity:</u> The function of a fire-prone facility would be relocated and utility services would be provided by alternate methods.</p> <p><u>2.5.2.3 Improvement:</u> Existing structures and facilities would be improved to reduce their vulnerability to fires. Roads in high fire-hazard areas would be improved.</p> <p><u>2.5.2.4 New Activity:</u> New facilities would be constructed in areas with low fire-hazard.</p> <p><u>2.5.2.5 Combined:</u> Same as 2.5.1.5.</p>	<p><u>2.5.3.1 No Action:</u> Same as 2.5.1.1.</p> <p><u>2.5.3.2 Low-Intensity:</u> Same as 2.5.1.2.</p> <p><u>2.5.3.3 Improvement:</u> Existing structures and facilities would be improved to increase water availability for fire fighting.</p> <p><u>2.5.3.4 New Activity:</u> New fire hydrant system, water tanks, and reservoirs would be installed or constructed.</p> <p><u>2.5.3.5 Combined:</u> Same as 2.5.1.5.</p>
Potential Impacts			
Geology, Geohazards, and Soils	<p><u>4.1.1.1 No Action:</u> No impact.</p> <p><u>4.1.1.2 Low-Intensity:</u> Erosion control measures would minimize short-term soil loss during construction. Actions would comply with regulations protecting prime farmlands.</p> <p><u>4.1.1.3 Improvement:</u> Erosion control measures would minimize soil loss caused by clearing vegetation.</p> <p><u>4.1.1.4 New Activity:</u> Same as for Section 4.1.1.3.</p> <p><u>4.1.1.5 Combined:</u> Cumulative impacts will be identified and evaluated in SEA.</p>	<p><u>4.2.1.1 No Action:</u> No impact.</p> <p><u>4.2.1.2 Low-Intensity:</u> Short-term erosion and soil loss would be minimized by following BMPs.</p> <p><u>4.2.1.3 Improvement:</u> Short term soil loss and erosion would be minimized by following BMPs. Seismic upgrades may be required for some facilities.</p> <p><u>4.2.1.4 New Activity:</u> Same as for Section 4.1.1.2.</p> <p><u>4.2.1.5 Combined:</u> Same as for Section 4.1.1.5.</p>	<p><u>4.3.1.1 No Action:</u> No impact.</p> <p><u>4.3.1.2 Low-Intensity:</u> Same as for Section 4.1.1.2.</p> <p><u>4.3.1.3 Improvement:</u> Erosion control measures would minimize short-term soil loss and siltation. FEMA would consult with NRCS in compliance with FPPA if agricultural land is acquired outside city limits.</p> <p><u>4.4.1.4 New Activity:</u> Same as for Section 4.3.1.3.</p> <p><u>4.4.1.5 Combined:</u> Same as for Section 4.1.1.5.</p>
Air Quality	<p><u>4.1.2.1 No Action:</u> No impact.</p> <p><u>4.1.2.2 Low-Intensity:</u> BMPs used to reduce short-term impacts caused by construction.</p> <p><u>4.1.2.3 Improvement:</u> Permit required from APCD for prescribed burns.</p> <p><u>4.1.2.4 New Activity:</u> Same as for Section 4.1.2.3.</p> <p><u>4.1.2.5 Combined:</u> Same as for Section 4.1.1.5.</p>	<p><u>4.2.2.1 No Action:</u> No impact.</p> <p><u>4.2.2.2 Low-Intensity:</u> Local APCD would be contacted for permitting requirements for large-scale projects.</p> <p><u>4.2.2.3 Improvement:</u> PM₁₀, PM_{2.5}, and precursors of ozone would be emitted during improvements to the roadways. Mitigation measures discusses in 4.1.2.2 would be implemented.</p> <p><u>4.2.2.4 New Activity:</u> Same as for Section 4.1.2.2.</p> <p><u>4.2.2.5 Combined:</u> Same as for Section 4.1.1.5.</p>	<p><u>4.3.1.3 No Action:</u> No impact.</p> <p><u>4.3.2.2 Low-Intensity:</u> Same as for Section 4.1.2.2.</p> <p><u>4.3.2.3 Improvement:</u> Same as for Section 4.1.2.2.</p> <p><u>4.3.2.4 New Activity:</u> Same as for Section 4.1.2.2.</p> <p><u>4.3.2.5 Combined:</u> Same as for Section 4.1.1.5.</p>
Air Quality (continued)			
Hydrology and Water Quality	<p><u>4.1.3.1 No Action:</u> No impact.</p> <p><u>4.1.3.2 Low-Intensity:</u> BMPs would reduce runoff, sedimentation, and stormwater pollution during</p>	<p><u>4.2.3.1 No Action:</u> No impact.</p> <p><u>4.2.3.2 Low-Intensity:</u> Increased erosion, runoff, and stormwater pollution mitigated through construction</p>	<p><u>4.3.3.1 No Action:</u> No impact.</p> <p><u>4.3.3.2 Low-Intensity:</u> Same as for Section 4.1.3.2.</p> <p><u>4.3.3.3 Improvement:</u> Increased runoff and erosion</p>

Table 2-1
Impact Summary Matrix

	Vegetation Management	Fire-Prone Buildings, Roads, and Utilities	Water Storage and Supply
	<p>construction.</p> <p><u>4.1.3.3 Improvement:</u> Water quality impacts from runoff, erosion, off-road vehicles, animal waste, and herbicides would be mitigated by: expansion of fuelbreaks in a blended mosaic fashion, use of construction BMPs, vehicle parking on paved surfaces, management of grazing, proper use of herbicides, and revegetation of cleared areas with fire-resistant species.</p> <p><u>4.1.3.4 New Activity:</u> Same as for Section 4.1.3.3.</p> <p><u>4.1.3.5 Combined:</u> Same as for Section 4.1.1.5.</p>	<p>BMPs</p> <p><u>4.2.3.3 Improvement:</u> Proper management of demolition debris and construction materials required to reduce stormwater pollution. Other impacts from construction mitigated by construction BMPs.</p> <p><u>4.2.3.4 New Activity:</u> Same as for Section 4.2.3.3.</p> <p><u>4.2.3.5 Combined:</u> Same as for Section 4.1.1.5.</p>	<p>potential should be mitigated through construction BMPs.</p> <p><u>4.3.3.4 New Activity:</u> Same as for Section 4.3.3.3.</p> <p><u>4.3.3.5 Combined:</u> Same as for Section 4.1.1.5.</p>
Floodplain Management	<p><u>4.1.4.1 No Action:</u> No impact.</p> <p><u>4.1.4.2 Low-Intensity:</u> Alternative would comply with the NFIP, local flood ordinances, EO 11988, and 44 CFR Part 9.</p> <p><u>4.1.4.3 Improvement:</u> All activities would comply with the NFIP, local flood ordinances, EO 11988, and 44 CFR Part 9.</p> <p><u>4.1.4.4 New Activity:</u> Same as for Section 4.1.4.3.</p> <p><u>4.1.4.5 Combined:</u> Same as for Section 4.1.1.5.</p>	<p><u>4.2.4.1 No Action:</u> No impact.</p> <p><u>4.2.4.2 Low-Intensity:</u> Same as for Section 4.1.4.2.</p> <p><u>4.2.4.3 Improvement:</u> If projects are substantial then measures would be implemented as described in Section 4.1.4.2.</p> <p><u>4.2.4.4 New Activity:</u> Same as for Section 4.1.4.2.</p> <p><u>4.2.4.5 Combined:</u> Same as for Section 4.1.1.5.</p>	<p><u>4.3.4.1 No Action:</u> Same as for Section 4.1.4.1.</p> <p><u>4.3.4.2 Low-Intensity:</u> Same as for Section 4.1.4.2.</p> <p><u>4.3.4.3 Improvement:</u> If a reservoir is built within the 100 year floodplain, floodplain characteristics are expected to change. The FIRM and local zoning ordinances may be revised to reflect changes in the floodplain. All activities would comply with the NFIP, local flood ordinances, EO 11988, and 44 CFR Part 9.</p> <p><u>4.3.4.4 New Activity:</u> Same as for Section 4.3.4.3.</p> <p><u>4.3.4.5 Combined:</u> Same as for Section 4.1.1.5.</p>
Biological Resources	<p><u>4.1.5.1 No Action:</u> Fire occurring due to lack of vegetation management would result in the loss of vegetation and terrestrial wildlife habitat.</p> <p><u>4.1.5.2 Low-Intensity:</u> Beneficial impacts would result from education on topics of fire-hazard reduction techniques.</p> <p><u>4.1.5.3 Improvement:</u> Actions would comply with EO 11990, and a Section 404 Permit would be obtained from the USACE if a project affects wetlands. Vegetation thinning and removal may impact sensitive plant species and mature native trees; projects would be designed to avoid native plant populations, and mitigation measures would be implemented to protect mature trees. Coordination with USFWS, CDFG, and local authorities would be required.</p> <p><u>4.1.5.4 New Activity:</u> Same as for Section 4.1.5.3.</p> <p><u>4.1.5.5 Combined:</u> Same as for Section 4.1.1.5.</p>	<p><u>4.2.5.1 No Action:</u> Same as for Section 4.1.5.1.</p> <p><u>4.2.5.2 Low-Intensity:</u> A beneficial impact of increasing net acreage of native habitat would occur, assuming facility footprint is restored with native vegetation.</p> <p><u>4.2.5.3 Improvement:</u> Would benefit non-fire-tolerant biological resources by reducing potential losses from wildfires.</p> <p><u>4.2.5.4 New Activity:</u> Same as for Section 4.2.5.3.</p> <p><u>4.2.5.5 Combined:</u> Same as for Section 4.1.1.5.</p>	<p><u>4.3.5.1 No Action:</u> Same as for Section 4.1.5.1.</p> <p><u>4.3.5.2 Low-Intensity:</u> Same as for Section 4.1.5.2.</p> <p><u>4.3.5.3 Improvement:</u> Beneficial impacts from better response to fire.</p> <p><u>4.3.5.4 New Activity:</u> Same as for Section 4.3.5.3.</p> <p><u>4.3.5.5 Combined:</u> Same as for Section 4.1.1.5.</p>
Biological Resources (Continued)			
Threatened and Endangered Species	<p><u>4.1.6.1 No Action:</u> Fire caused by lack of vegetation management may lead to adverse impacts on special-status species.</p> <p><u>4.1.6.2 Low-Intensity:</u> There may be short-term impacts during construction of demonstration areas.</p> <p><u>4.1.6.3 Improvement:</u> The PBO would be followed to minimize potential impact. If a PBO does not exist,</p>	<p><u>4.2.6.1 No Action:</u> Same as for Section 4.1.6.1.</p> <p><u>4.2.6.2 Low-Intensity:</u> In the placement of a demonstration/ public education facility, suitable habitat for protected species would be avoided as much as possible. If not possible, stipulations in the PBO must be adhered to. If PBO is not available, FEMA would consult with USFWS and NMFS.</p>	<p><u>4.3.6.1 No Action:</u> Same as for Section 4.1.6.1.</p> <p><u>4.3.6.2 Low-Intensity:</u> Same as for Section 4.1.6.2.</p> <p><u>4.3.6.3 Improvement:</u> Special-status species habitat would be avoided. If not, stipulations in PBO would be adhered to. If PBO does not exist for a species, FEMA would consult with USFWS and NMFS.</p> <p><u>4.3.6.4 New Activity:</u> Same as for Section 4.3.6.3.</p>

Table 2-1
Impact Summary Matrix

	Vegetation Management	Fire-Prone Buildings, Roads, and Utilities	Water Storage and Supply
	FEMA would consult with USFWS and NMFS. <u>4.1.6.4 New Activity:</u> Same as for Section 4.1.6.3. <u>4.1.6.5 Combined:</u> Same as for Section 4.1.1.5.	<u>4.2.6.3 Improvement:</u> Same as for Section 4.2.6.2. In addition, ingress and egress of equipment could adversely affect special status species. <u>4.2.6.4 New Activity:</u> Same as for Section 4.2.6.3. <u>4.2.6.5 Combined:</u> Same as for Section 4.1.1.5.	<u>4.3.6.5 Combined:</u> Same as for Section 4.1.1.5.
Cultural Resources	<u>4.1.7.1 No Action:</u> Lack of fire hazard reduction could result in potential impacts to historic properties from future fires. <u>4.1.7.2 Low-Intensity:</u> Construction may impact cultural resources and would require evaluation pursuant to the PA. <u>4.1.7.3 Improvement:</u> Each proposed action would be evaluated pursuant to the PA regarding potential impacts. <u>4.1.7.4 New Activity:</u> Same as for Section 4.1.7.3. <u>4.1.7.5 Combined:</u> Same as for Section 4.1.1.5.	<u>4.2.7.1 No Action:</u> Same as for Section 4.1.7.1. <u>4.2.7.2 Low-Intensity:</u> Coordination with the SHPO and ACHP would be required, pursuant to the PA. <u>4.2.7.3 Improvement:</u> Same as for Section 4.2.7.2. <u>4.2.7.4 New Activity:</u> Same as for Section 4.2.7.2. <u>4.2.7.5 Combined:</u> Same as for Section 4.1.1.5.	<u>4.3.7.1 No Action:</u> Same as for Section 4.1.7.1. <u>4.3.7.2 Low-Intensity:</u> Same as for Section 4.1.7.2. <u>4.3.7.3 Improvement:</u> Same as for Section 4.1.7.2. <u>4.3.7.4 New Activity:</u> Same as for Section 4.1.7.2. <u>4.3.7.5 Combined:</u> Same as for Section 4.1.1.5.
Socioeconomics and Public Safety	<u>4.1.8.1 No Action:</u> A fire resulting from lack of vegetation management would negatively effect the economy of the affected area. <u>4.1.8.2 Low-Intensity:</u> Education programs could lead to the reduction of public safety hazards and property damage. <u>4.1.8.3 Improvement:</u> Public safety would increase and property damage would decrease as the hazard of wildfires is reduced. <u>4.1.8.4 New Activity:</u> Same as for Section 4.1.8.3. <u>4.1.8.5 Combined:</u> Same as for Section 4.1.1.5.	<u>4.2.8.1 No Action:</u> Same as for Section 4.1.8.1. <u>4.2.8.2 Low-Intensity:</u> Impacts from relocation of businesses and residences would be reduced through compliance with the Uniform Relocation Act and Chapter 16 of the California Government Code. If relocation is proposed in areas with a majority of minority and low income households, an SEA would examine the potential for disproportionate impacts on these groups. <u>4.2.8.3 Improvement:</u> Road and utility closure would temporarily impact users. The local economy would benefit from construction costs if purchased locally. <u>4.2.8.4 New Activity:</u> Same as for Sections 4.2.8.2 and 4.2.8.3. <u>4.2.8.5 Combined:</u> Same as for Sections 4.1.1.5.	<u>4.3.8.1 No Action:</u> Same as for Section 4.1.8.1. <u>4.3.8.2 Low-Intensity:</u> Same as for Section 4.1.8.2. <u>4.3.8.3 Improvement:</u> Improvements would reduce potential for fire-related losses to residents, businesses, and government facilities and indirect impacts described in Section 4.1.8.2. <u>4.3.8.4 New Activity:</u> Same as for Section 4.3.8.3. <u>4.3.8.5 Combined:</u> Same as for Section 4.1.1.5.
Socioeconomics and Public Safety			
Land Use and Zoning	<u>4.1.9.1 No Action:</u> No impact. <u>4.1.9.2 Low-Intensity:</u> Local zoning ordinances would be reviewed to determine if proposed land use would be consistent with existing statutes. <u>4.1.9.3 Improvement:</u> Same as for Section 4.1.9.2. <u>4.1.9.4 New Activity:</u> Same as for Section 4.1.9.2. <u>4.1.9.5 Combined:</u> Same as for Section 4.1.1.5.	<u>4.2.9.1 No Action:</u> No impact. <u>4.2.9.2 Low-Intensity:</u> Same as for Section 4.1.9.2. <u>4.2.9.3 Improvement:</u> If necessary, local governments would grant variances for improvements to properties with non-conforming uses in order to comply with local regulations. <u>4.2.9.4 New Activity:</u> New construction projects would be evaluated for compliance with local zoning ordinance. If necessary, subgrantee would seek variance or amendment to zoning designation so that proposed land use is in compliance. <u>4.2.9.5 Combined:</u> Same as for Section 4.1.1.5.	<u>4.3.9.1 No Action:</u> No impact. <u>4.3.9.2 Low-Intensity:</u> Same as for Section 4.1.9.2. <u>4.3.9.3 Improvement:</u> Same as for Section 4.1.9.3. <u>4.3.9.4 New Activity:</u> Same as for Section 4.1.9.3. <u>4.3.9.5 Combined:</u> Same as for Section 4.1.1.5.
Public Services	<u>4.1.10.1 No Action:</u> Facilities that provide public	<u>4.2.10.1 No Action:</u> Same as for Section 4.1.10.1.	<u>4.3.10.1 No Action:</u> Same as for Section 4.1.10.1.

Table 2-1
Impact Summary Matrix

	Vegetation Management	Fire-Prone Buildings, Roads, and Utilities	Water Storage and Supply
	<p>services would remain subject to fire risk.</p> <p><u>4.1.10.2 Low-Intensity:</u> Public service professionals may contribute to public education programs.</p> <p><u>4.1.10.3 Improvement:</u> Public service facilities would benefit from reduced fire risk. Controlled burns could negatively impact recreational areas by affecting the natural beauty and creating smoke and noise. Public would be notified of any vegetation management projects.</p> <p><u>4.1.10.4 New Activity:</u> Same as for Section 4.1.10.3.</p> <p><u>4.1.10.5 Combined:</u> Same as for Section 4.1.1.5.</p>	<p><u>4.2.10.2 Low-Intensity:</u> Beneficial impacts would occur by reducing the risk of future fire damage to the relocated facility, but there may be adverse impacts associated with this alternative that involve changes in time and distance. Individual projects would be evaluated for potential effects and mitigated appropriately.</p> <p><u>4.2.10.3 Improvement:</u> Public service facilities would benefit by the reduction of risk from fire damage. Construction may cause inconveniences for the public services users. Improvements would be scheduled during underutilized periods.</p> <p><u>4.2.10.4 New Activity:</u> Same as for Section 4.2.10.1.</p> <p><u>4.2.10.5 Combined:</u> Same as for Section 4.1.1.5.</p>	<p><u>4.3.10.2 Low-Intensity:</u> Same as for Section 4.1.10.2.</p> <p><u>4.3.10.3 Improvement:</u> Same as for Section 4.1.10.3.</p> <p><u>4.3.10.4 New Activity:</u> Same as for Section 4.1.10.3.</p> <p><u>4.3.10.5 Combined:</u> Same as for Section 4.1.1.5.</p>
Transportation	<p><u>4.1.11.1 No Action:</u> Roads would be closed during future fire events.</p> <p><u>4.1.11.2 Low-Intensity:</u> Temporary road closures may occur during construction. Detour routes and signs would coordinated with transportation planning agencies.</p> <p><u>4.1.11.3 Improvement:</u> Same as for Section 4.1.11.2.</p> <p><u>4.1.11.4 New Activity:</u> Same as for Section 4.1.11.2.</p> <p><u>4.1.11.5 Combined:</u> Same as for Section 4.1.1.5.</p>	<p><u>4.2.11.1 No Action:</u> Same as for Section 4.1.11.1.</p> <p><u>4.2.11.2 Low-Intensity:</u> Actions would temporarily increase traffic causing congestion, delays, and possible detours. Affected roads/routes would be reviewed to determine if existing roads/services would adequately handle permanent relocations.</p> <p><u>4.2.11.3 Improvement:</u> Improvements would cause temporary congestion, delays, and possible detours. Subgrantee would coordinate detour routes and signs with appropriate transportation planning agencies.</p> <p><u>4.2.11.4 New Activity:</u> Actions would temporarily increase traffic congestion, delays, and possible detours. Subgrantee would coordinate detour routes and signs with appropriate transportation planning agencies.</p> <p>Affected services would be reviewed to determine if they would adequately handle permanent relocations.</p> <p><u>4.2.11.5 Combined:</u> Same as for Section 4.1.1.5.</p>	<p><u>4.3.11.1 No Action:</u> Same as for Section 4.1.11.1.</p> <p><u>4.3.11.2 Low-Intensity:</u> Same as for Section 4.1.11.2.</p> <p><u>4.3.11.3 Improvement:</u> Temporary road closures, delays, and congestion would occur during construction. Detour routs and signs would be coordinated with appropriate transportation planning agencies.</p> <p><u>4.3.11.4 New Activity:</u> Same as for Section 4.3.11.3.</p> <p><u>4.3.11.5 Combined:</u> Same as for Section 4.1.1.5.</p>
Transportation (Continued)			
Noise	<p><u>4.1.12.1 No Action:</u> No impact.</p> <p><u>4.1.12.2 Low-Intensity:</u> No impact.</p> <p><u>4.1.12.3 Improvement:</u> Construction activities that generate noise would comply with local and state noise ordinances. Users of recreational areas would be notified about projects.</p> <p><u>4.1.12.4 New Activity:</u> Same as for Section 4.1.12.3.</p> <p><u>4.1.12.5 Combined:</u> Same as for Section 4.1.1.5.</p>	<p><u>4.2.12.1 No Action:</u> Temporary noise sources are expected to be operated in compliance with local noise ordinance. No permanent noise would be created.</p> <p><u>4.2.12.2 Low-Intensity:</u> Same as for Section 4.2.12.1.</p> <p><u>4.2.12.3 Improvement:</u> Same as for Section 4.2.12.1.</p> <p><u>4.2.12.4 New Activity:</u> Temporary noise sources are expected to be operated in compliance with local noise ordinance. Construction of new roads or facilities may introduce permanent noise sources. Local noise ordinances would be reviewed for potential impacts caused by new facilities or roads.</p> <p><u>4.2.12.5 Combined:</u> Same as for Section 4.1.1.5.</p>	<p><u>4.3.12.1 No Action:</u> Same as for Section 4.1.12.1.</p> <p><u>4.3.12.2 Low-Intensity:</u> Same as for Section 4.1.12.2.</p> <p><u>4.3.12.3 Improvement:</u> Temporary noise would be created. Construction activities would comply with local noise ordinances. Mitigation measures described in Section 4.1.12.3 would be implemented.</p> <p><u>4.3.12.4 New Activity:</u> Same as for Section 4.3.12.3.</p> <p><u>4.3.12.5 Combined:</u> Same as for Section 4.1.1.5.</p>
Hazardous	<p><u>4.1.13.1 No Action:</u> Continued danger caused by</p>	<p><u>4.2.13.1 No Action:</u> Same as for Section 4.1.13.1.</p>	<p><u>4.3.13.1 No Action:</u> Same as for Section 4.1.13.1.</p>

Table 2-1
Impact Summary Matrix

	Vegetation Management	Fire-Prone Buildings, Roads, and Utilities	Water Storage and Supply
Materials and Wastes	hazardous materials being stored in fire-prone areas. <u>4.1.13.2 Low-Intensity:</u> FEMA would review historic uses of properties to be acquired and a Phase I Environmental Site Assessment would be conducted if necessary. <u>4.1.13.3 Improvement:</u> Use of hazardous materials would follow legal requirements for storage, handling, and use. <u>4.1.13.4 New Activity:</u> Same as for Section 4.1.13.3. <u>4.1.13.5 Combined:</u> Same as for Section 4.1.1.5.	<u>4.2.13.2 Low-Intensity:</u> Demolishing existing structures would be completed in compliance with the applicable regulations associated with asbestos and lead abatement and UST closures. Coordination with the Air District, the Water Resource Board, ARB, and the USEPA would be required. <u>4.2.13.3 Improvement:</u> No impact. <u>4.2.13.4 New Activity:</u> Same as for Section 4.2.13.3. In addition, an ESA would be conducted on the proposed site. <u>4.2.13.5 Combined:</u> Same as for Section 4.1.1.5.	<u>4.3.13.2 Low-Intensity:</u> Same as for Section 4.1.13.2. <u>4.3.13.3 Improvement:</u> Same as for Section 4.1.13.2. <u>4.3.13.4 New Activity:</u> Same as for Section 4.3.13.3. <u>4.3.13.5 Combined:</u> Same as for Section 4.1.1.5.
Visual Resources Visual Resources (Continued)	<u>4.1.14.1 No Action:</u> A fire disaster may adversely impact visual resources. <u>4.1.14.2 Low-Intensity:</u> Projects would be evaluated using BLM guidelines. Mitigations would be project specific. <u>4.1.14.3 Improvement:</u> Visual quality would be affected by removal of vegetation. FEMA would evaluate each project using FHWA, BLM, or other federal agency's guidelines. Mitigations would be project specific. <u>4.1.14.4 New Activity:</u> Same as for Section 4.1.14.3. <u>4.1.14.5 Combined:</u> Same as for Section 4.1.15.	<u>4.2.14.1 No Action:</u> Same as for Section 4.1.14.1. <u>4.2.14.2 Low-Intensity:</u> Demolition and vegetation of fire-prone facilities may impact visual resources. FEMA would evaluate projects on a case-by-case basis using BLM guidelines. <u>4.2.14.3 Improvement:</u> Road Improvements may impact visual resources. Projects should be evaluated on a case-by case basis using FHWA, BLM, or other appropriate federal agency guidelines. <u>4.2.14.4 New Activity:</u> Same as for Section 4.1.14.3. <u>4.2.14.5 Combined:</u> Same as for Section 4.1.1.5.	<u>4.3.14.1 No Action:</u> Same as for Section 4.1.14.1. <u>4.3.14.2 Low-Intensity:</u> Same as for Section 4.1.14.2. <u>4.3.14.3 Improvement:</u> Installing water lines could impact visual resources through clearing of vegetation and trenching. Improvements to a reservoir could also impact visual resources. Impacts would be evaluated following BLM guidelines. <u>4.3.14.4 New Activity:</u> Same as for Section 4.3.14.3. <u>4.3.14.5 Combined:</u> Same as for Section 4.1.1.5.

3 AFFECTED ENVIRONMENT

This chapter describes the existing conditions for each resource category, including applicable statutes. Some resources have more or less information than others concerning the existing conditions and regulatory background. The difference between resources depends on the nature of the resource and is not an indicator of the resource's importance. For example, geology, geohazards, and soils are easily described on a regional basis and have federal statutes that apply to development; therefore this section is relatively long. By contrast, land use and zoning are primarily contingent on local plans and statutes, which are impossible to describe in a document that considers the entire state; therefore, this section is relatively short. A more detailed description of the affected environment in the area of the proposed action and alternatives will be provided in an SEA, as necessary to evaluate project impacts.

3.1 Geology, Geohazards, and Soils

3.1.1 *Geology*

California is an area of complex geology and diverse geologic terranes, including the Sierra Nevada Mountains, major volcanoes, the San Andreas Fault, Death Valley, the Salton Sea, extensive sand dune fields, and the La Brea Tar Pits. The state is divided into 11 geomorphic sections (refer to Exhibit 3-1).

3.1.1.1 *Klamath Mountains, Modoc Plateau, and Cascade Range*

These are mountainous sections comprised of metamorphosed sedimentary and volcanic rocks, as well as more recent volcanic cones, lava (basalt) flows, and tuff (volcanic ash) beds. These include the active volcanoes Lassen Peak and Mount Shasta, which reaches an elevation of 14,162 feet above mean sea level.

3.1.1.2 *Coast Ranges*

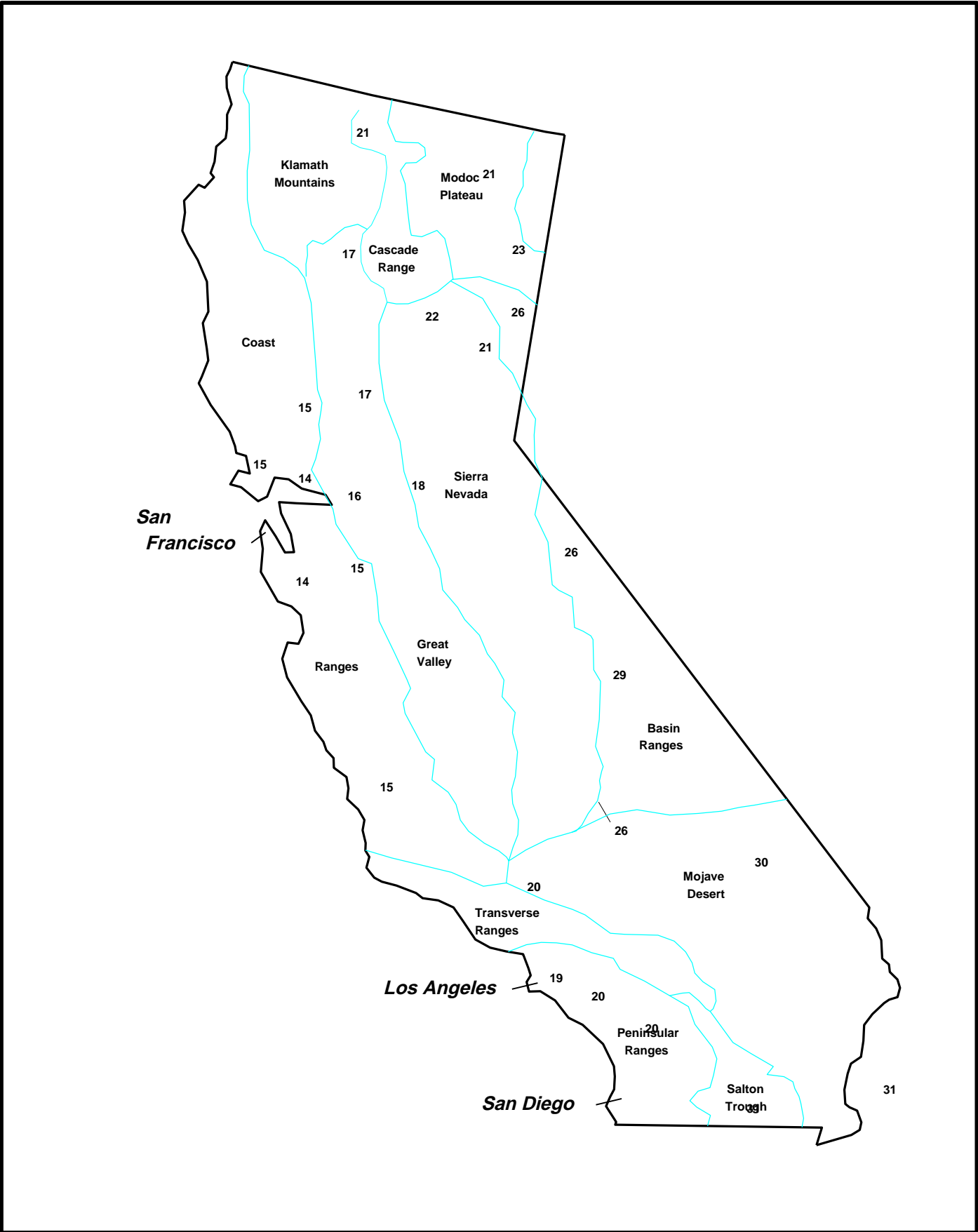
A series of relatively parallel, roughly north-south trending mountain ranges and valleys comprise the Coast Ranges. These ranges are dissected by many active faults, including the San Andreas.

3.1.1.3 *Great Valley*

The Great Valley is a vast sedimentary alluvial plain on the western side of the Sierra Nevada Mountains. This plain is the drainage basin for most of California's rivers, which originate in the mountains.

3.1.1.4 *Sierra Nevada*

A westward-tilted fault block of Paleozoic and Mesozoic metasediments and volcanics was intruded by a Mesozoic granitic batholith, now the Sierra Nevada Mountains. The Sierra Nevada Mountains have a gentle western slope and a steep eastern slope.



CLIENT CEMENT					TITLE GEOMORPHIC PROVINCES		
PROJ PRIMEPEA					GEOMORPHIC SECTIONS		
REVISION NO	REVNO	DES BY	DES	DES DATE	<div>PaRR<div>A Joint Venture of Dewberry & Davis and Woodward-Clyde</div></div> <div>Partnership for Response and Recovery</div>	PROJ NO	PROB31100
SCALE	SCALE	DR BY	DRMLN	DR DATE		EXHIBIT	
FILE	DRAWING	CHK BY	CHEKSKR	CHK DATE			3814

3.1.1.5 Basin Ranges

East of the Sierra Nevada Mountains is an area of tilted fault blocks forming parallel north-south-trending mountains alternating with downdropped basins.

3.1.1.6 Transverse Ranges

The Transverse Ranges are a series of parallel ranges and valleys trending east west in contrast to the north-south pattern of other geomorphic sections.

3.1.1.7 Mojave Desert

The Mojave Desert, in southeastern California, is a vast area of isolated mountains separated by expanses of alluvial fans.

3.1.1.8 Peninsular Ranges

Geologically similar to the Sierra Nevada Mountains, comprised of granitic intrusive rocks, but geomorphically similar to the Coast Ranges Province.

3.1.1.9 Salton Basin (Colorado Desert)

Salton Basin is a low-lying basin located east of the Peninsular Ranges. Part of the basin lies below mean sea level.

3.1.2 Geohazards

Geohazards may affect project facilities including pipelines or linear structures, new facilities, and detention/retention basins through landslides, subsidence, and earthquake-related effects such as surface fault rupture, ground shaking, and liquefaction.

3.1.2.1 Landslides

Landslides are common after flooding events and after earthquakes of sufficient magnitude to disturb slope stability. Landslides can cause significant damage to structures of any type. The placement of critical structures or inhabited buildings in landslide-prone areas can be avoided by appropriate planning. County and city general plans include maps of areas considered to be at risk from slope failure.

3.1.2.2 Subsidence

Land surface subsidence can be induced by both natural and human phenomena. Natural phenomena include soil subsidence due to consolidation, hydrocompaction, or rapid sedimentation. Human activity can induce subsidence through removal of subsurface fluid or sediment, including mining or removal of groundwater from underlying aquifers. Subsidence of the ground surface can affect linear features, such as pipelines or lined channels. County and city general plans include maps of areas impacted by subsidence.

3.1.2.3 Earthquakes

California is dissected by many earthquake-producing faults, large and small. As a result, most of California is subject to earthquake hazards. Earthquakes are sudden releases of strain energy stored in the earth's bedrock. Information on earthquakes and fault traces (courses) can be obtained from the U.S. Geological Survey's National Earthquake Information Center in Denver and the California Division of Mines and Geology in Sacramento. The major effects of earthquakes are surface rupture, ground shaking, and other forms of ground failure including liquefaction and subsidence. These effects are described below.

Surface fault rupture: The ground surface within 50 feet of an active fault trace is considered to be in the fault rupture hazard zone and therefore subject to possible rupture from fault movement. No structure for human occupancy is permitted on the trace of an active fault. Active faults are considered faults that have been active during the Holocene period, approximately the last 10,000 years (Hart 1992). Potentially active faults are faults that have been active during the Quaternary period, approximately the last 3 million years. In addition to faults classified as active or potentially active, the activity of other faults has not been clearly established by currently available information. Identified active faults in California have been mapped under the Alquist-Priolo Special Studies Zones Act and are indicated in Exhibit 3-2.

Ground shaking: Solid ground or rock tends to dampen seismic motion while poorly consolidated and water-saturated materials amplify seismic motion. Areas situated on hard bedrock with little soil cover may be expected to perform satisfactorily during earthquakes. Areas underlain by weakly consolidated materials, such as alluvial fans, large floodplains, bay and delta deposits, and artificial fill are generally considered more vulnerable to damage due to ground shaking.

Liquefaction: Liquefaction is a form of ground failure caused by earthquake motion in water-saturated, unconsolidated, relatively clay-free silts and sands. The result is a "quicksand-like" condition caused by hydraulic pressure (from earthquake motion) forcing soil particles apart and into quicksand-like liquid suspension. Normally firm, but wet, ground materials thus like liquids and can cause catastrophic ground failure, including landslides; settling and tilting of structures; water, sewer, natural gas pipeline ruptures; and failure of dams and other water-retaining structures.

3.1.3 Regulatory Framework for Geology and Geohazards

3.1.3.1 Federal

EO 12699 (Seismic Safety) requires new buildings to be constructed according to current and appropriate seismic design and construction standards to reduce the likelihood of damage due to earthquakes.

3.1.3.2 California State

The major state legislation regarding earthquake fault zones is the Alquist-Priolo Special Studies Zones Act of 1972. The purpose of this act is to regulate development near active faults to

mitigate the hazard of surface fault rupture. Under this act, the State Geologist is required to delineate “special studies zones” along known active faults in California. Cities and counties affected by the zones must regulate development projects within the zones. They must withhold development permits for sites within the zones until geologic investigations demonstrate that the sites are not threatened by surface rupture from future earthquakes. This act states that “no structure for human occupancy defined as a ‘project’ is permitted on the trace [course] of an active fault.” A statewide map indicating the principal active faults that are zoned for special studies under this act is shown in Exhibit 3-2.

3.1.3.3 *County and City*

Counties and cities have developed general plans that include county (or city)-specific descriptions of the geology and seismic hazards as well as specific building restrictions. As part of the environmental review process and as part of general plan requirements, a site-specific geologic report may be required in areas with known or suspected active faults; additionally, implementing mitigation measures to offset seismic hazards, especially for facilities considered as critical, may be required.

3.1.4 *Soils*

California has been divided by the U.S. Department of Agriculture (USDA) into three broad land resource regions including the “Northwestern Forest, Forage, and Specialty Crop Region,” the “California Subtropical Fruit, Truck and Specialty Crop Region,” and the “Western Range and Irrigated Region;” each of these is further subdivided. These land resource regions and general soil categories are summarized on Table 3-1.

The California Department of Conservation maintains a Farmland Mapping and Monitoring Program for planning present and future use of agricultural land resources. Using Land Inventory and Monitoring (LIM) criteria and maps begun under the Important Farmland Mapping project by the National Resources Conservation Service (NRCS), California has identified eight mapping categories as described in Table 3-1. This program is nonregulatory and is intended to provide consistent, impartial analysis of agricultural land use.

3.1.5 *Regulatory Framework for Soils*

3.1.5.1 *Federal*

NRCS Important Farmland Mapping produced agricultural resource maps using a series of definitions known as the LIM criteria to designate land suitability for agricultural production. These maps are available from the NRCS offices located in each state.

The objective of the Farmland Protection Policy Act (FPPA) is to protect prime farmland from actions taken by federal agencies (7 CFR Part 658). Prime farmland is characterized as soils having sufficient available water capacity, adequate temperature, pH, depth, erodability, slope, and permeability rate, with a low occurrence of rock, flooding, and erosion. Prime farmlands,

Table 3-1
Soil Mapping Categories

Prime Farmland	The soils have relatively dry (xeric, ustic, or aridic [torric]) moisture regimes in which the available water capacity is at least 4 inches per 40 to 60 inches of soil, and agriculture requires developed irrigation water supplies that are dependable and of adequate quality. A dependable water supply is one that is available for the production of the common crops in 8 out of 10 years. The soils have a temperature regime that ranges from frigid (cold), mesic, thermic, through hyperthermic (very warm). These are soils that, at a depth of 20 inches, have a mean annual temperature higher than 32 degrees Fahrenheit (°F). In addition, the mean summer temperature at this depth in soils with an O (top soil) horizon is higher than 47°F; in soils that have no O horizon, the mean summer temperature is higher than 59°F. The soils have a pH that ranges between 4.5 (moderately acidic) and 8.4 (moderately alkaline) in all soil horizons within 40 inches of the surface. The soils have no water table or have a water table that is maintained at a sufficient depth during the cropping season to allow common crops to be grown.
Farmland of Statewide Importance	Land similar to Prime Farmland that has a good combination of physical and chemical characteristics for agricultural crop production. This land has minor shortcomings, such as greater slopes or less soil moisture storage capacity than Prime Farmland. Land must have been used for production of irrigated crops at some time during the 4-year period before the mapping date.
Unique Farmland	Lesser quality soils used for production of the state's leading agricultural crops. This land is usually irrigated, but may include nonirrigated orchards or vineyards in some climatic zones. Land must have been cropped at some time during the 4-year period before the mapping date.
Farmland of Local Importance	Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.
Grazing Land	Land with existing vegetation that is suitable for livestock grazing. This category is used only in California and was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups interested in the extent of grazing activities. The minimum mapping unit for Grazing Land is 40 acres.
Urban and Built-up Land	Land occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel.
Other Land	Land that does not meet the criteria of any other category.
Water	Water areas covering at least 40 acres.

due to their composition and characteristics, can support the growth of a variety of crops with only low-level management.

3.1.5.2 *State*

The Office of Land Conservation, under the California Department of Conservation, maintains four programs that monitor and protect California's farmland and soil resources: the Agricultural Land Stewardship Program, the Soil Resource Protection Program, the Williamson Act Program, and the Farmland Mapping and Monitoring Program. Each of these programs must be considered in reviewing impacts to farmland soils.

- *Agricultural Land Stewardship Program* – This program is designed as an incentive to promote long-term protection of the state's productive agricultural lands from urban development and provides funding to purchase development rights from agricultural landowners.
- *Soil Resource Protection Program* – This program operates under the guidelines of the Soil Conservation Plan for California, which identifies ways to deal with soil resource problems such as soil erosion, salinity, and contamination.
- *Williamson Act Program* – The Williamson Act was created to balance the pressure of urban growth on farmlands, by providing incentives for farmers and ranchers to remain in agriculture. Counties and cities administer this voluntary land conservation program.
- *Farmland Mapping and Monitoring Program* – This program monitors land-use change affecting California's agricultural land. The program produces and provides maps and data for assessing and planning agricultural resources.

3.1.5.3 *County/City*

Under the California Farmland Mapping and Monitoring Program, each county defines lands to be considered Farmland of Local Importance; this land is either currently producing, or has the capability of production, but does not meet the criteria of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. The relevant county/city general plan or the California Department of Conservation Farmland Maps should be reviewed.

3.1.6 *Potential Impacts*

Potential impacts related to geology and soils are primarily related to relocation of structures into geologically sensitive areas, to geohazards and resulting potential earthquake damage to proposed new facilities, and to possible impacts to soils depending on facility siting and construction requirements.

To avoid potential impacts to unique geologic resources and designated mineral resource areas, the relevant county and city general plan should be consulted before siting new facilities. Local general plans will also include maps showing areas permitted for mining under Conditional Use Permits.

Geohazards may affect a project through landslides, subsidence, and earthquake-related effects including surface fault rupture, ground shaking, and liquefaction. Depending on the severity of the geologic event (e.g., earthquake), secondary effects such as localized flooding and structural

damage could occur. Potential risks associated with geohazards can normally be reduced to acceptable levels via proper design. Appropriate geotechnical studies and engineering designs should be used to design earthquake-resistant facilities to mitigate liquefaction and other seismic hazards to acceptable levels.

Impacts to soils are generally due either to soil disturbance as a result of the project type, disturbance during construction (increased or accelerated erosion), or loss of prime agricultural soils due to development.

3.2 Air Quality

3.2.1 *Background in Air Quality Management in California*

Air quality in California is managed through the Clean Air Act of 1970, the 1990 Clean Air Act Amendments, and the California Clean Air Act of 1988. The federal and state Clean Air Acts are implemented through a three-point strategy: local controls for managing stationary, nonvehicular sources and permitting; state controls for setting emissions for motor vehicles, fuels, and consumer products; and federal controls for interstate pollutants (Marvin 1997). To further support the goal of reduced emissions, the State Implementation Plan was adopted in 1994 as an approach to reduce air pollution region by region in future years. This plan contains measures that would allow each region to reach attainment status (meet the primary standard for all air quality criteria). Although the federal and the state government play a role in managing California's air quality, the acts are implemented primarily at the local level.

California has 58 counties, and county air quality is managed by one of the 35 Air Quality Management Districts (AQMDs) located across the state. California is divided geographically into 14 air basins to manage air quality on a regional basis. Each air district is responsible for controlling air pollution within the district to meet all state and federal air quality standards. Using regional air quality data, each air district adopts its own statutes to deal with the air quality problems particular to that region, including setting emission limits for stationary sources, such as factories and power plants. In addition, each district develops its own clean air plan and enforces local pollution control laws. Because the air quality problems vary from county to county, each air district has its own requirements for managing air quality.

The California Air Resources Board (ARB) assists air districts with setting appropriate emissions limits, enforcing laws, and providing technical staff and equipment when needed. The ARB also sets air quality standards, identifies and sets control measures for toxic air contaminants, and oversees and assists the air quality districts (ARB 1997a).

3.2.2 *Applicable Air Quality Statutes*

Several statutes exist to manage California air quality, and many may apply to a particular project; however, one statute in particular is perhaps the most applicable to potential federal projects: the New Source Review (NSR) permitting process statutes. The NSR is part of the federal Clean Air Act, but was more stringently adopted in California (Popejoy 1997). Under this permitting

process, any new potential source of emissions may have to be permitted by the air districts. Even temporary sources, such as increased particulate matter less than 10 micrometers in diameter (PM₁₀) due to construction, may require a permit, depending on the district and its air quality. In most cases, a permit may not be required for temporary, small-scale construction measures. However, the air district associated with the project must be contacted to ultimately determine regulation applicability, regardless of project scale.

Of the listed actions, the following are the most relevant to FEMA projects: projects under NSR, emergency actions, mitigation specifically required by environmental laws, planning studies, routine maintenance and repairs, and permits or licenses for activities that will be similar to ongoing activities (40 CFR Part 51.853).

The requirement to comply with California air quality varies depending on which air district the project is taking place. As a general rule, projects involving construction or demolition may increase the level of air pollutants beyond the established threshold. If this is the case, the air district could require that a permit be obtained, and suggest methods to decrease potential air quality impacts. As an example, the district may determine that dam construction would increase local particulate and carbon monoxide levels during construction. A district may then mandate that watering practices be used to reduce the amount of dust and dirt in the area, and regulate the use of large engine vehicles to certain time periods. In order to ensure compliance with these regional-specific laws, coordination with the air district must take place before project inception. A brief project description will be required for the district to determine if a permit is needed.

3.2.3 *Summary of California Air Quality for the Criteria Air Pollutants*

In general, California's air quality is managed so that its regions may meet attainment for each of the criteria air pollutants. Although the air quality for the individual regions could vary widely, California's air quality has improved greatly since 1947. Table 3-2 shows current attainment and nonattainment counties or air basins in California.

The six criteria pollutants are carbon monoxide, nitrogen dioxide, ozone, PM₁₀, sulfur dioxide, and lead. Carbon monoxide is generated from motor vehicles and woodburning, and is a human health risk. Nitrogen dioxide is a product of combustion, and can be seen as a brown haze. Organic gases react with nitrogen dioxide to form ozone, which causes low visibility and health effects including respiratory disease and eye irritation. Particulate matter is a component of smoke, and can have a variety of health effects depending on its chemical composition. Sulfur dioxide is generated from burning fossil fuels; it causes damage to vegetation and reduces the health of humans and animals. Airborne lead is generally produced from automobiles, and can cause blood-related effects and may also affect the central nervous and reproductive systems.

Table 3-2
Attainment and Nonattainment Status in California

Pollutant	Air Basin or County Designation
Ozone	All air basins are in N for this pollutant except: North Coast (A), Northeast

Table 3-2
Attainment and Nonattainment Status in California

Pollutant	Air Basin or County Designation
	Plateau (A), Butte County (T), Glenn County (T), Alpine County (U), Inyo County (U), Plumas County (U), Sierra County (U), and Lake Tahoe and Lake County Air Basins (both A).
Carbon Monoxide	Most areas are U for this pollutant. Counties and basins designated as being in A: San Francisco air basin, South Central Coast air basin, Lake County air basin, and Humboldt, Mendocino, Monterey, Orange, Riverside, San Bernardino, Butte, Placer, Sacramento, Solano, Sutter, Yolo, rural Fresno, Kern, San Joaquin, Stanislaus, Tulare, Inyo, Mono, Los Angeles, Riverside, Plumas, and Tuolumne. Counties in T: portion of Los Angeles County, Fresno urbanized area, and El Dorado County.
Nitrogen Dioxide	All air basins are in A for this pollutant
Sulfur Dioxide	All air basins are in A for this pollutant
PM ₁₀	All air basins are in N for this pollutant except Lassen (U), Amador (U), Mariposa (U), and Tuolumne counties, and the Lake Tahoe Air Basin.
Sulfates	All basins are in A except for Searles Valley Planning area in the Mojave Desert Air Basin.
Lead	All basins are in A for this pollutant.
Hydrogen Sulfide	All basins are U for this pollutant, except for parts of Humboldt County (A), Geyser Geothermal Area (A), San Luis Obispo (A), Santa Barbara (A), Mono (A), and Inyo (A) counties, Searles Valley Planning Area (N), City of Sutter Creek (N), and the Lake Tahoe Air Basin (A).
Visibility Reducing Particles	All basins are U for this pollutant, except the Lake County Air Basin (A).
Source: ARB 1997b A - Attainment (an area that did not violate the state standard in 3 years) N - Nonattainment (an area that violated the state standard for that pollutant at least once in 3 years) T - Nonattainment-Transitional (an area that has violated the state standard 2 or fewer times at each test site in the area in the previous year) U - Unclassified (an area that cannot be designated A or N due to lack of data)	

Exceeding a concentration level is a violation and constitutes a nonattainment of the pollutant standard. If an air quality control region violates the National Ambient Air Quality Standards for a pollutant more than once per year, that region is defined as a nonattainment area for that pollutant.

Hazardous air pollutants, or toxic air contaminants, have no established air quality standards, but have potential cancer and noncancer health effects that are evaluated on a case-by-case basis.

Hazardous air pollutants are emitted from several sources including fossil fuel burning and paints and thinners. Some common hazardous air pollutants are benzene, 1,3-butadiene, carbon tetrachloride, perchloroethylene, and vinyl chloride.

3.3 Hydrology and Water Quality

About 75 percent of California's available water originates north of Sacramento and approximately 75 percent of its water requirements occur south of this area. Furthermore, most of the state's precipitation falls during the winter, while the highest need is during the spring and summer. Of the annual runoff, approximately 32 percent flows into rivers and ultimately into the ocean, 29 percent is protected under the wild and scenic river system or used for delta fresh water and fish flow requirements, and 6 percent is used for municipalities and industry. Agriculture uses 31 percent of the state's runoff (85 percent of the developed water supply) (Water Education Foundation, California Water Map 1997).

Water storage, diversion, and distribution systems handle about 60 percent of the state's water requirement; included in these systems are the federal Central Valley Project, the State Water Project, and miscellaneous regional and local water agency projects. Water quality is vitally important in California and is carefully monitored and regulated by numerous federal, state, and local agencies.

3.3.1 *Regulatory Framework for Hydrology and Water Quality*

Federal statutes and EOs, state statutes, and state agency regulations and directives protect water quality and the beneficial uses of water. Many statutes control activities that indirectly impact water quality, such as EO 11988 (Floodplain Management) and EO 11990 (Protection of Wetlands). These statutes are described in other sections of this PEA, where relevant.

3.3.1.1 *Federal*

The Clean Water Act (CWA) regulates water quality of all discharges into "waters of the United States (U.S.)." Both wetlands and "dry washes" (channel that carry intermittent or seasonal flow) are considered "waters of the U. S." California has adopted equivalent or more stringent statutes than the federal statutes, which are enforced by the California State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCBs). The U. S. Army Corps of Engineers (USACE) may need to be contacted.

3.3.1.2 *State of California*

The SWRCB and the RWQCBs work together to protect California's water resources and are responsible for establishing water quality standards and objectives that protect the beneficial uses of different waters. The nine RWQCBs are responsible for protecting the surface, ground, and coastal waters from pollution originating from point sources (i.e., sewage treatment plant discharge) and nonpoint sources (i.e., runoff from urban paved areas, mines, cattle farms). Modifications and/or new construction of a facility may require one or more of the following

permits from the RWQCB; the applicant should contact the RWQCB if any possibility of needing one of the following permits exist:

- National Pollution Discharge Elimination System (NPDES) General Permit

This permit may be required if an industrial, agricultural, or commercial facility is constructed or moved and if the facility discharges any waters other than to the sanitary sewer.

- NPDES Stormwater Construction Permit

This permit is required for any construction activity that will affect 5 acres or more, unless local restrictions impose a smaller acreage. Specifically excluded is construction activity that includes “routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility.” Applicants should contact the local RWQCB if they are not sure whether a permit is required.

- NPDES Stormwater Industrial Permit

Stormwater Permits are currently required for most industrial properties. If modifications are made or if an industrial facility is relocated, the permit must be modified to reflect these changes.

For additional information, the locations and addresses of the RWQCB offices are indicated on Exhibit 3-3.

The California Department of Fish and Game (CDFG) regulates alterations made to natural waterways. Modifications or new construction of facilities that may impact the volume or quality of water entering a natural waterway (such as a culvert discharging into a “dry wash”) may be required to obtain a Streambed Alteration Permit. “Natural waterways” includes channels that carry only intermittent or seasonal flow.

3.3.1.3 County and City

Counties and cities have developed general plans that include county- (or city-) specific descriptions of existing surface and groundwater resources.

Some urbanized counties and municipalities in California have countywide or areawide stormwater permits that offer guidelines and restrictions to new development that may impact modifications or construction of new facilities. The local Flood Control District administers these plans. If no areawide stormwater permit is in place and the facility is located near the coastline, the applicant must comply with the Coastal Zone Management Act administered by the California Coastal Commission. Furthermore, the applicant must ensure that a coastal zone federal consistency determination would be appropriate for the project.

Additionally, some municipalities have adopted Watershed Management Plans that may regulate or restrict modification and/or construction of facilities that discharge into waters within their plan area.



1. North Coast Region
5550 Skyline Blvd., Suite A
Santa Rosa, CA 95403
(707) 576-2220
 2. San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, CA 94612
(510) 286-1255
 3. Central Coast Region
81 Higuera Street, Suite 200
San Luis Obispo, CA 93401-5427
(805) 549-3147
 4. Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156
(213) 266-7500
 5. Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3098
(916) 255-3000
- Fresno Branch Office
3514 East Ashlan Avenue
Fresno, CA 93726
(209) 445-5116
- Redding Branch Office
415 Knollcrest Drive
Redding, CA 96002
(916) 224-4845

6. Lahontan Region
2092 Lake Tahoe Blvd., Suite 2
South Lake Tahoe, CA 96150
(916) 542-5400
- Victorville Branch Office
15428 Civic Drive, Suite 100
Victorville, CA 92392-2383
(619) 241-6583
7. Colorado River Basin
73-720 Fred Waring, Suite 100
Palm Desert, CA 92260
(619) 345-7491
8. Santa Ana Region
3737 Main Street, Suite 500
Riverside, CA 92501-3339
(714) 782-4130
9. San Diego Region
9771 Clairemont Mesa Blvd., Suite A
San Diego, CA 92124
(619) 467-2952

FEMA

FEMA - PEA

REGIONAL WATER QUALITY CONTROL BOARD OFFICES

REVNO	DES	DESDATE
N.T.S.	DML	1-14-98
	SI	1-14-98

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3.4 Floodplain Management

Impacts related to floodplain management include potential damage to structures located in the floodplain and changes to the extent, elevation, or other features of the floodplain as a result of flood protection measures or other structures being sited in or removed from the floodplain.

The term floodplain generally refers to the 100-year floodplain. The 100-year floodplain designates the area subject to inundation from a flood having a 1 percent chance of occurring in any given year. This flood is referred to as the “100-year flood” or “base flood” and may occur more or less often than once every 100 years. In circumstances known as “critical actions,” the regulated flood-prone area is defined by the 500-year floodplain. The 500-year floodplain designates the area subject to inundation from a flood having a 0.2 percent chance of occurring in any given year.

Floodplains are designated on national Flood Insurance Rate Maps (FIRMs) or Flood Hazard Boundary Maps (FHBMs) for communities that are members of the National Flood Insurance Program (NFIP). The NFIP and its implementing regulations (44 CFR 59 through 77) stipulate minimum standards for floodplain development in communities that participate in the program. Local governments incorporate these standards, or in some cases more stringent standards, into their floodplain ordinances. In addition to showing the locations of the 100-year and 500-year floodplains, many FIRMs and FHBMs show the base flood elevation (BFE), which is the estimated elevation of the 100-year flood. FIRMs and FHBMs delineate floodplains with other descriptors; the most important of these are the floodway and the 100-year coastal, high hazard floodplain. The floodway is the channel of a river or other watercourse and adjacent land areas that are required to remain free from development to discharge the base flood without cumulatively increasing the water-surface elevation. The coastal floodplain incorporates storm surges and has more stringent statutes for development than the normal 100-year floodplain because of the velocity of waves associated with coastal flooding.

The NEPA compliance process requires federal agencies to consider direct and indirect impacts to floodplains that may result from federally funded actions. EO 11988 requires federal agencies to take action to minimize occupancy and modification of floodplains. Furthermore, EO 11988 requires that federal agencies proposing to site a project in the 100-year floodplain must consider alternatives to avoid adverse effects and incompatible development in the floodplain. According to 44 CFR Part 9, critical actions, such as developing hazardous waste facilities, hospitals, or utility plants, must occur outside of the 500-year floodplain. If no practicable alternatives exist to siting a project in the floodplain, the project must be designed to minimize potential harm to or within the floodplain. Furthermore, a notice must be publicly circulated explaining the project and the reasons for the project being sited in the floodplain. FEMA applies the Eight-Step Decision-Making Process to ensure that it funds projects consistent with EO 11988. By its nature, the NEPA compliance process involves the same basic decision-making process as the Eight-Step Decision-Making Process. Therefore, the Eight-Step Decision-Making Process has been applied through implementing the NEPA process.

3.5 Biological Resources

This summary identifies vegetation, wildlife, and wetland resources that could be affected by the FEMA programs. Potentially applicable federal, state, and local statutes that have been designed to preserve and protect biological resources are also reviewed in this summary. It does not provide site-specific information on all plant and wildlife species that may be affected. Instead, information is presented on a broad regional level appropriate for a programmatic approach to environmental review. A review of special-status species of plants, wildlife, and rare natural communities is presented in a separate section of this report.

California is one of the most biologically diverse areas in the world. Within its 160,000 square miles, California harbors more plant and animal species than any other state in the U.S. The diversity of climates and landscapes, and barriers to migrations such as rivers, mountains, and deserts, have led over million of years to the evolution of a large number of isolated (endemic) species and varieties of animals, many of which are found only in the state. For example, approximately 30,000 species of insects, 63 fresh-water fishes, 46 amphibians, 96 reptiles, 563 birds, 190 mammals, and about 8,000 plants are recorded from California (Steinhart 1990).

3.5.1 *Vegetation Resources and Associated Wildlife*

California's mountain ranges, deserts, and extensive coastline, along with its unusual summer-dry (Mediterranean) climate, set the stage for a complex and fascinating flora (Skinner and Pavlik 1994). In the coastal mountains, heavy winter precipitation and summer fog support dense needleleaf evergreen forests, such as redwood, pine, and fir, and needleleaf-broadleaf forests as far south as the Transverse Ranges. Broadleaf forests, typically dominated by oak, are common in the higher elevations from the Transverse Ranges south to the Mexican border. Eastward across the Cascades and Sierra Nevada Mountains, the increase of precipitation with higher elevation leads to an orderly succession of plant communities, from grasslands (California prairie), to mixed oak and pine woodlands and forests, and finally to an even higher elevation sequence of pine, fir, and subalpine communities. In the high mountains of Southern California, the forest succession is similar, with the exception of the lower slopes, which are commonly dominated by extensive sagebrush and chaparral (Hornbeck 1983).

Compared to the mountainous areas, the California lowlands are relatively dry even on the coast. Consequently, lowland areas support mainly treeless grasslands and marshes, particularly in the Central Valley, or scrub formations, such as those in the eastern deserts. These desert communities are frequently dominated by creosote bush, saltbrush, and Joshua tree woodlands (Hornbeck 1983).

The diverse vegetation habitats in California support a wide variety of wildlife species. The structural complexity of forest/woodland communities makes them important for wildlife diversity. Conifers, for example, provide excellent nesting platforms for raptors and support woodpeckers, jays, crossbills, kinglets, and grouse. Mule deer, black bear, squirrels, voles, and chipmunks are common mammals that find forage and cover in forested areas. Common amphibian and reptile species include the black salamander, western fence lizard, ensatina, garter

snakes, king snake, and Pacific treefrog. Grassland areas provide important foraging habitat for the coyote and badger because they support large populations of small prey species, such as the deer mouse, California vole, pocket gopher, and California ground squirrel. Common reptiles and amphibians of grassland habitats include western fence lizard, common kingsnake, western rattlesnake, gopher snake, common garter snake, western toad, and western spadefoot toad.

Drier communities associated with shrub/scrub communities support rabbits, black-tailed and mule deer, gray fox, coyote, western rattlesnakes, and several species of birds including California quail, wrentit, orange-crowned warbler, and towhees. Wildlife resources associated with desert communities include mammals such as coyote, badger, gray fox, bobcat, skunk, black-tailed jackrabbit, cottontail rabbit, California ground squirrel, woodrat, and pocket mice; birds such as raven, horned lark, scrub jay, mourning dove, and western meadowlark; and amphibian and reptile species such as horned lizard, desert iguana, side-blotched lizards, western whiptails, western fence lizards, and western rattlesnakes.

3.5.2 *Riparian Resources and Associated Wildlife Species*

“Riparian” communities occur along creeks and rivers and are found throughout California. These communities are adapted to wide seasonal and annual fluctuations in flow volumes, abundant floodplain soil moisture, and a dynamic erosion-deposition cycle. Riparian communities are usually in a constant ecological successional state because of the dynamic nature of topography and hydrology (Campbell and Green 1968). The resulting succession is responsible for the plant species and structural diversity in riparian areas. Fluvial (riverine) processes such as flooding, with its bank erosion and sediment deposition, create gravel bars and terraces. Riparian vegetation is important because of its scarcity and resource values; it serves humans directly by forming a buffer between rivers and streams and intensively managed farmlands and urban landscapes, enhancing water quality by filtering surface runoff, stabilizing streambanks, and moderating flood flows.

Riparian communities typically support great wildlife diversity because they present a unique combination of surface water and groundwater, fertile soils, high nutrient availability, and vegetation layering (Warner 1979). Wildlife species that forage on seeds (granivores) and foliage (foliivores) in scrub and herb habitats along creeks and rivers include squirrel, gopher, vole, quail, dove, starling, goldfinch, and blackbird. Aquatic areas within the river channel provide foraging areas for carnivores and omnivores such as river otter, waterfowl, and gulls. Riparian areas provide nesting sites for a variety of specially adapted species such as the bank swallow, belted kingfisher, northern rough-winged swallow, and owls. Riparian (and also wetland) vegetation also supports an abundance of insects that feed on fresh foliage and stems. These insects in turn support a high density and diversity of migratory and resident insectivorous birds and bats.

3.5.3 *Wetland Resources and Associated Wildlife Species*

Wetlands, similar to riparian areas, occur along lakes, ponds, marshes, rivers, streams, hill/mountain-side seeps, perched water tables, and plow pans. They are often inundated by water and normally have saturated or seasonally saturated soil conditions within 18 inches of the

surface. Common wetland plants range from cottonwoods and willows, to sedges, rushes, and cattails. The width of the areas may vary from a few feet along small streams to several hundred feet along major rivers. Because of the presence of moisture and abundant nutrients, wetlands and riparian areas are often the most productive areas of vegetative growth and have high wildlife habitat value. Two broad categories of wetland communities occur in California: fresh-water emergent wetlands and saline emergent wetlands. Open-water and tidal flat communities are generally unvegetated but are associated with wetland communities.

Fresh-water emergent wetlands include fresh-water marshes, vernal pools, and wetlands that are managed and maintained impoundments associated with flood control/water supply structures. Water-seeking (hydrophytes and/or halophytes) vegetation living in brackish or saline waters or soils such as those found along the California coast dominate saline emergent wetland vegetation. These saline wetlands provide habitat for birds, such as salt marsh yellowthroat, song sparrow, marsh wren, American coot, and shorebirds, and migratory waterfowl. Raccoon, opossum, striped skunk, red fox, and coyote forage along the edges of saline emergent wetlands.

3.5.4 Regulatory Context

Section 404 of the CWA authorizes the USACE to issue permits, after notice and opportunity for public hearing, for the discharge of dredged or fill material into the waters of the U.S. at specified disposal sites. These waters include navigable waters and other waters such as intrastate lakes, rivers, and streams (including intermittent streams, wetlands, sloughs etc.). Therefore, a 404 permit can be required for discharging dredged or fill material in many watercourses in California.

The Fish and Wildlife Coordination Act of 1958 Section 1 and 2 mandates that fish and wildlife species receive equal consideration with water resource development programs throughout planning, development, operation, and maintenance. Whenever federal agencies propose to impound, divert, channelize, or otherwise alter or modify any stream, river, or other body of water in California, for any purpose, the federal agency must first consult and coordinate its actions and projects with the USFWS and CDFG. This consultation and coordination addresses ways to conserve wildlife resources by preventing loss of and damage to such resources as well as to further develop and improve these resources.

Section 1601 of the California Fish and Game Code requires notification to the CDFG when activities will “substantially divert or obstruct the natural flow of, or substantially change the bed, channel, or bank of, or use material from the streambed of a natural watercourse.” Consistency with CDFG statutes is determined on a case-by-case basis, culminating in either project-specific agreements or 1-year blanket agreements when impacts are minimal. Wetland mitigation is required as part of the 1601 permit when impacts to wetlands are unavoidable.

Counties and cities have general plans that include county/city-specific descriptions of the biological resources as well as specific development restrictions to protect these resources. As part of the environmental review process and as part of the general plan requirements, a site-specific biological report may be required in areas with known or suspected sensitive biological resources; additionally, mitigation measures to offset biological impacts may be required. Oak

trees are specifically a protected resource in California both at local and state levels and frequently require mitigation when oaks are impacted from projects.

3.6 Threatened and Endangered Species

The Endangered Species Act of 1973 (16 United States Code [USC] Sections 1531 to 1534) requires federal agencies to determine the effects of their actions on T&E species of fish, wildlife, and plants, and their habitats, and take steps to conserve and protect these species. This PEA assumes that FEMA has requested formal consultation under Section 7 of the Endangered Species Act, as amended for the declared disaster. It is also assumed that the USFWS and NMFS in accordance with Section 7 of the act have or will provide a PBO on the effects of both emergency fire actions that have already occurred and nonemergency fire-hazard reduction projects that are planned for the future, on listed and proposed species.

In California, over 200 T&E species plus numerous species proposed and candidate are listed. Only the species that may be adversely affected by emergency and nonemergency fire-hazard reduction actions are included in the PBO. In a previous disaster that included 49 counties in California, 159 species (124 listed as threatened or endangered, 32 proposed species, and 3 candidate species) were included in the PBO issued by the USFWS (White and Noda 1997; Appendix C). Of these 159 species, 132 were classified as “at risk” by the USFWS and avoidance was the only approach that was allowed under the PBO. If impacts to “at risk” species could not be avoided, FEMA was required to consult separately on these projects. For the remaining 27 species, under specific conditions a limited amount of take was authorized by the USFWS. The take was limited to no more than 5 acres of suitable habitat per proposed or listed species per county, with no more than a cumulative total of 50 acres of suitable habitat per county. Projects that would have a larger area of impact than addressed in the opinion required special consultation with the USFWS. The evaluation for T&E species in this PEA assumes all avoidance and/or impact minimization conditions for each listed-species identified by the USFWS and NMFS in the PBO(s) are implemented by each FEMA-approved project.

Protection of state-listed species and consultation with CDFG is the responsibility of the subgrantee.

3.7 Cultural Resources

In addition to review under NEPA, consideration of impacts to cultural resources is mandated under Section 106 of the NHPA and implemented by 36 CFR Part 800. Requirements include identifying significant historic properties and districts that may be affected by the proposed actions or alternatives. Historic properties are defined as archaeological sites, standing structures, or other historic resources listed on, or determined potentially eligible to, the NRHP (36 CFR 60.4).

FEMA, in cooperation with the ACHP and the SHPO, acknowledges that disaster assistance would be more effective if specific procedures are developed to exclude from the ACHP and SHPO review routine activities with little potential to adversely affect historic properties. To

facilitate compliance with NHPA, FEMA typically executes a PA, which replaces the standard Section 106 compliance process so that the effects of proposed disaster relief undertakings that involve historic properties can be considered while delays to FEMA's delivery of assistance to qualified applicants are minimized. As discussed in Section 1.5.2, the executed PA for a previous disaster is attached as Appendix D.

For all alternatives, except the No Action Alternative, if no potential for significant cultural resources is determined before a particular action and the requirements pursuant to the PA are implemented, SHPO coordination would still be required in the event that cultural resources are discovered during any ground-disturbing activity to identify, evaluate, and mitigate adverse effects to those historic properties.

3.8 Socioeconomics and Public Safety

Impacts related to socioeconomic resources include changes to demographics, housing, employment, the local economy, and public safety hazards.

The U.S. Department of Commerce Bureau of the Census provides much of the relevant data on demographics and housing. Although only conducted every 10 years, the U.S. census provides the most accurate and detailed information for the years that data were acquired. In addition, the census provides the basis for most projections and estimates prepared by national, state, local, and private organizations. State, county, and city provide census data for political subdivisions of the country, for example. In addition, census data are provided by statistical subdivision that includes (in order of decreasing size) tracts, block-numbering areas, block groups, and blocks. These statistical subdivisions of counties were delineated to be homogeneous with respect to demographics, economic status, and living conditions. Most local governments have basic demographic, economic, and employment data based on political subdivisions.

EO 12898 requires federal agencies to make achieving environmental justice part of their missions by identifying and addressing disproportionately high and adverse public health or environmental effects of its programs, policies, and activities on minority and low-income populations. EO 12898 also tasks federal agencies to ensure that public notifications regarding environmental issues are concise, understandable, and readily accessible.

3.9 Land Use and Zoning

Generally, land use refers to the existing function of real property. Examples of the most common land-use categories include residential, commercial, industrial, public (or institutional), recreational, agricultural, and open (or undeveloped). Many of these categories are further subdivided, for example, high-, medium-, and low-density residential or light and heavy industrial. Land uses are frequently regulated by management plans, policies, ordinances, and statutes that determine the types of uses that are allowable or protect specifically designated or environmentally sensitive uses. Virtually every level of government regulates land use. At the federal level, for example, land-use statutes range from the USDA restrictions to avoid soil

erosion to the designation of wilderness areas. California's Planning and Zoning Law (Chapter 7 of the California Government Code) designates areas to be protected because of scenic and scientific value, forest and agricultural importance, and potentially hazardous conditions.

Land-use regulation is most common at the local level. This local land-use regulation, or zoning, is defined herein as the designation given by a governmental unit to classify and regulate development. These zones generally use the same terms listed above for land uses. Most incorporated cities and the incorporated areas of many counties are subject to zoning ordinances. In addition to geographically defining these zones, zoning ordinances prohibit development that is inconsistent with land uses in the given district. For example, building an industrial facility in a low-density residential district would be prohibited in most city or county zoning ordinances. Compliance with zoning ordinances is enforced by local governments as part of the building permit process.

This section focuses on land uses regulated by human, rather than environmental, constraints. For example, cities and counties in the floodplain frequently specify an overlay zone that designates the floodplain and corresponding statutes prohibiting development in the floodplain. Because these statutes are based on the NFIP, these issues are addressed in sections that discuss Floodplain Management. Similarly, issues such as prime farmlands and coastal zone management are discussed in sections concerning Geology, Soils, and Seismicity and Water Quality and Hydrology, respectively.

3.10 Public Services

This section considers the impacts to services provided by political jurisdiction, including police, fire, recreation, and education. Although usually provided by the private sector, medical services and utilities (including water, sewage, electricity, telephone, and natural gas) are considered public services when assessing a community's ability to handle infrastructure or demographic changes.

Impacts to these resources could be caused in two manners. First, public facilities in high fire-hazard could be directly affected through relocation or fire-hazard reduction projects. Second, changes to demographics or housing could indirectly affect a community's requirements for public services.

Guidelines and statutes regarding these resources are found at the local level. Local jurisdictions frequently establish building codes and other construction standards and prescribe requirements for local police and fire protection. Local planning agencies may establish goals or ordinances for the amount of parks or undeveloped areas. Although California and the federal government constrain aspects of school policy decision making, local school boards determine school operations. Many components of utility services are also regulated at the federal and state level; however, these regulation do not generally apply to impacts caused by FEMA actions considered in this PEA.

3.11 Transportation

The California Department of Transportation is responsible for the design, construction, and maintenance of the California State Highway System, in addition to that portion of interstate highways within California's boundaries. The U.S. Department of Transportation Federal Highway Administration (FHWA) provides funding and oversight of projects involving federal highways. Transportation planning agencies of local governments are responsible for design, construction, and maintenance of county and local roads. Public transportation is managed by private, public, and quasi-governmental agencies at the local level.

3.12 Noise

Sound is most commonly measured in decibels on the A-weighted scale, which is the scale most similar to the range of sounds that the human ear can hear. The Day-Night Average Sound Level (DNL) is an average measure of sound. It takes into account the volume of each sound incident, the number of times each incident occurs, and the time of day each incident occurs (nighttime sound being weighted more heavily because it is assumed to be more annoying to the community). The DNL descriptor is accepted by federal agencies as a standard for estimating sound impacts and establishing guidelines for compatible land uses.

Noise, defined herein as unwanted or unwelcome sound, is federally regulated by the Noise Control Act of 1972 (NCA). Although the NCA tasks the U. S. Environmental Protection Agency (EPA) to prepare guidelines for acceptable ambient noise levels, it only charges those federal agencies that operate noise-producing facilities or equipment to implement noise standards. By nature of its mission, FEMA does not have statutes defining noise. The EPA's guidelines (and those of many federal agencies) state that outdoor sound levels in excess of 55 decibel DNL are "normally unacceptable" for noise-sensitive land uses such as residences, schools, and hospitals. The California NCA of 1973 (Chapter 14 of the California Health and Safety Code) delegates the authority to regulate ambient noise to local jurisdictions.

Most noise associated with fire-hazard reduction projects is emitted from mechanical equipment used in repair, improvement, construction, and demolition.

3.13 Hazardous Materials and Wastes

Hazardous materials and wastes are regulated in California via a combination of federally mandated laws and region-specific laws developed by the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC), and the ARB. The hazardous waste statutes are contained as part of the California Health and Safety Code, Chapter 6.5, Hazardous Waste Control. Hazardous waste statutes applicable to the majority of FEMA's projects considered in this PEA are summarized below and detailed in this section:

- Demolition of lead-containing material
- Demolition of asbestos-containing material (ACM)

- Closure of sites containing hazardous substances
- Closure of underground storage tanks (USTs)

3.13.1 Demolition of Asbestos-Containing Material

The ACMs in residential homes and commercial buildings may include shingles, tiles, transite (asbestos-cement), or insulation around plumbing and heating ducts. EPA has classified ACM into several categories. Nonfriable ACMs are classified as either Category I or Category II material. Category I material is defined as asbestos-containing resilient floor covering (tile), asphalt roofing products, packings, and gaskets.

The EPA has defined Category II materials as all remaining types of nonfriable ACM not included in Category I that, when dry, cannot be crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations. An example of Category II material is nonfriable asbestos-cement products such as transite. Friable ACM is defined as any material containing more than 1 percent asbestos that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. Regulated ACM may be one of the following:

- Friable asbestos material
- Category I nonfriable ACM that has become friable
- Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading
- Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations

3.13.2 Demolition of Nonfriable Asbestos-Containing Material

California manages asbestos through the ARB, which is part of the California Environmental Protection Agency. Working with the ARB are the AQMD and the air pollution control districts (APCDs) which, at the local level, are primarily responsible for the management of asbestos in their region. Sixteen air districts manage asbestos in accordance with the federal asbestos National Emissions Standard for Hazardous Air Pollutants (NESHAP), 40 CFR Part 61, and 17 air districts have developed their own, more stringent statutes for managing asbestos removal (Table 3-3). In cases where demolition of buildings containing asbestos is part of a project, the appropriate air district, or the ARB and the EPA must be contacted before the inception of the project.

In accordance to the asbestos NESHAP, 40 CFR Part 61, Subpart M, Category I materials that are not in poor condition, are not friable, and do not have to be removed before demolition. Further information and handling procedures for the demolition of Category I material are included in *A Guide to Normal Demolition Practices Under the Asbestos NESHAP* (EPA 1992), and from the air pollution districts associated with the project.

Table 3-3
California Asbestos NESHAP Air Pollution Control Districts

Delegated Districts (region-specific statutes)*	Nondelegated Districts (NESHAP)†
Bay Area AQMD	Amador County APCD
Great Basin Unified APCD	Butte County APCD
Lake County AQMD	Calaveras County APCD
Mendocino County APCD	Colusa County APCD
Modoc County APCD	El Dorado County APCD
Monterey Bay APCD	Feather River Unified APCD
North Coast Unified AQMD	Glenn County APCD
Northern Sonoma County APCD	Imperial County APCD
Sacramento Metro AQMD	Lassen County APCD
Mojave Desert APCD	Mariposa County APCD
San Diego County APCD	Northern Sierra County AQMD
San Joaquin Valley Unified APCD	Placer County APCD
San Luis Obispo County APCD	Shasta County APCD
Santa Barbara County APCD	Siskiyou County APCD
South Coast AQMD	Tehama County APCD
Ventura County APCD	Tuolumne County APCD
Yolo-Solano County APCD	
* Contact the air district before inception of the project	
† Contact the ARB and EPA before inception of the project	
Source: ARB, Compliance Division, November 1997.	

3.13.3 *Demolition of Friable or Potentially Friable Asbestos-Containing Material*

Friable ACM and material that may potentially become friable during demolition must be removed before demolition begins in accordance with the asbestos NESHAP, 40 CFR Part 61, Subpart M. Category II nonfriable ACM that has not become friable during demolition may be disposed of in a landfill that normally accepts construction debris, according to the asbestos NESHAP in 40 CFR Part 61. If the ACM is to be disposed of, disposal must occur in an approved facility. However, if Category II material is sanded, ground, cut, or abraded before it is buried at the landfill, it is subject to the asbestos NESHAP disposal regulations. Regulated ACM must be disposed of in a landfill that operates in accordance to 40 CFR 61.150 and Part 61.154, or in a EPA-approved conversion facility described in 40 CFR Part 61.155 of the asbestos NESHAP regulations. Further information and handling procedures for the demolition of regulated ACM and Category II material are included in the EPA (1992) guidance.

3.13.4 *Closure of Sites Containing Hazardous Substances*

The owner of a facility is responsible for notifying the DTSC when a release of a hazardous substance is discovered. Preventive or corrective action should also follow appropriate regulations under the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) as amended (40 CFR 300).

A release is defined as any intentional or unintentional act or omission resulting in the spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, including without limitation the abandonment or discarding of barrels, containers, and other closed receptacles, of any hazardous waste, hazardous constituent, or hazardous substance; provided however, that such term shall not include any release that results in exposure to a person solely within a workplace, with respect to a claim that such a person may assert against the employer of such a person; emission from the engine exhaust of any motor vehicle, rolling stock, aircraft, vessel, or pipeline pumping station; or the normal application of fertilizer (ONR-EP 391-3-19-02).

A hazardous substance is defined as:

- Any substance designated pursuant to Section 311(b)(2)(A) of the CWA, as amended (33 USC Section 466 et seq.)
- Any element, compound, mixture, solution, or substance designated pursuant to Section 102 of CERCLA, as amended (42 USC Section 9601 et seq.)
- Any substance as defined by the California Code, Chapter 6.5, Hazardous Waste Control
- Any toxic pollutant listed under Section 307(a) of the CWA, as amended (33 USC Section 466 et seq.)
- Any hazardous air pollutant listed under Section 112 of the Clean Air Act, as amended (42 USC Section 1857 et seq.)
- Any imminently hazardous chemical substance or mixture with respect to which the EPA has taken action pursuant to Section 7 of the Toxic Substance Control Act, as amended (15 USC Section 2601 et seq.)

A hazardous substance does not include petroleum, natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel. Hazardous substances should be disposed of in accordance with all federal and California hazardous waste regulations.

3.13.5 *Closure of Underground Storage Tanks*

The USTs in California are managed by the SWRCB, through their UST Program. One SWRCB and nine RWQCBs across the state oversee compliance with the tank laws. The local agencies are in charge of the tank-permitting program and issue operating and closure permits as necessary. If tanks are to be no longer used, closure permits must be secured and the tank removed or closed in place. If an UST problem (such as a leak) is identified, the RWQCB or local agency locates the responsible party, determines cleanup activities, and oversees the activities until complete. The SWRCB also

operates the UST Cleanup Fund, which funds corrective action and third party liability costs (SWRCB 1997).

California does not have statutes for the abatement of lead, and therefore, the federal standard is followed (Preston 1997).

3.14 Visual Resources

Visual importance of landscape elements is typically described with respect to their position relative to the viewer. Foreground elements are those features nearest to the viewer, and background elements are features at a great distance from the viewer. The middleground of a view is intermediate between the foreground and background. Generally, the closer a resource is to the viewer, the more dominant and important it is to the viewer.

For the visual resource analysis, effects of various treatment types on views from scenic highways, recreational and residential areas were considered. The analysis uses a qualitative, descriptive approach to evaluate visual resources near the proposed project. FEMA does not have guidelines for visual impacts, and no federal agency is responsible for monitoring visual impacts. Therefore, FEMA will use the guidelines of federal agencies with experience conducting visual impact analysis. For projects near roadways and highways, the method used for this visual assessment is adapted from guidelines prepared by the FHWA. For projects on public lands with multiple uses (such as state forests), assessment methods will follow guidelines prepared by the Bureau of Land Management (BLM). Local city and county general plans may also have guidelines on visual resources.

The FHWA has created a field guide that presents an approach to identifying the potential importance of visual effects and then assessing the nature of these effects. The guide provides technical assistance to people who prepare or review the coverage of visual effects in environmental assessments or impact statements. It is therefore oriented toward NEPA requirements, but the approach is also appropriate for the determination of project visual effects on historic and archeological resources (FHWA 1981).

The BLM has created a systematic approach to analyze the potential visual impacts of proposed projects and activities. It is intended as a guide for personnel not formally trained in design arts to minimize potential visual impacts. The basic philosophy underlying the system is: The degree to which a management activity affects the visual quality of a landscape depends on the visual contrast created between a project and the existing landscape. The contrast can be measured by comparing the project features with the major features in the existing landscape. The basic design elements of form, line, color, and texture are used to make this comparison and to describe the visual contrast created by the project. This assessment process provides a means for determining visual impacts and for identifying measures to mitigate these impacts (BLM 1986).

4 ENVIRONMENTAL CONSEQUENCES

For each specific project, an SEA will be prepared by FEMA, as mentioned in Section 1.3. Therefore, the potential impacts and mitigation measures described in this chapter would be augmented by a discussion in each SEA based on a specific project and area.

4.1 Vegetation Management

4.1.1 *Geology, Geohazards, and Soils*

4.1.1.1 *No Action Alternative*

Under this alternative, the fire hazard at the existing site would not change, and impacts to geology, geohazards, and soils from threat of future fires would not be mitigated. Areas burned by wildfires would be subject to erosion because of unstable soils following loss of vegetation. Furthermore, quantities of water used during fire fighting could cause substantial soil loss and erosion.

4.1.1.2 *Low-Intensity Alternative*

Construction of a fire-safe demonstration area would cause short-term erosion and soil loss; however, applying appropriate best management practices (BMPs) during construction would mitigate these impacts. Typical construction BMPs are presented in Table 4-1. Impacts to geological resources and impacts from geohazards would be minimized by appropriate siting of facilities and by applying appropriate geotechnical construction. Furthermore, building design in compliance of EO 12699 and local codes and standards would minimize effects of seismic activity. If construction of a fire-safe demonstration area would require the acquisition of agricultural land outside of incorporated city limits, FEMA would apply site assessment criteria and consult with the NCRS in compliance with the FPPA. Results of FPPA compliance would be documented in an SEA. To avoid potential impacts to unique geologic resources and designated mineral resource areas, local plans would be reviewed. Impacts to unique geologic resources and designated mineral resource areas would be discussed in an SEA, if necessary. Other forms of public education would not cause impacts to soils or geologic resources.

4.1.1.3 *Improvement Alternative*

This alternative would consist of expanding or improving fuelbreaks and fuel reduction zones. Both project types have the potential to increase erosion and soil loss because of loss of vegetation; however, fuelbreaks would generally cause greater impacts to soils because no vegetation would remain after clearing. Areas subject to landslide would be studied to determine the project's potential impact to slope stability and documented in an SEA, if necessary. Mitigation, such as creating water bars and compacting earth, would be applied to cleared areas to reduce erosion and soil loss. Additional mitigation may be required to prevent erosion and landslides on hillsides that were previously vegetated. The measures include the construction of

temporary silt fences, the use of jute netting, and revegetation with low-ignition potential native plant species. Erosion and soil disturbance would also be caused by the use of skid trails and log decks in the felling and removal of trees. These impacts would be temporary. Prescribed burns could volatilize nutrients and remove them from the soil, thereby lowering the productivity of the soil.

Table 4- 1
Typical Construction BMPs

General Principles	<p>Fit grading to the surrounding terrain.</p> <p>Time grading operations to minimize soil exposure.</p> <p>Retain existing vegetation whenever feasible.</p> <p>Vegetate and mulch or otherwise stabilize disturbed areas.</p> <p>Direct runoff away from disturbed areas.</p> <p>Minimize the length and steepness of slopes.</p> <p>Keep runoff velocities low.</p> <p>Prepare drainageways and outlets to handle concentrated runoff until permanent drainage structures are constructed.</p> <p>Trap sediment on site.</p> <p>Inspect and maintain control measures frequently.</p>
Structural Control Measures	<p>Where possible maintain runoff water within its natural course and direction of flow.</p> <p>Design and maintain access roads to prevent ponding and damage from water flow.</p> <p>Limit cut and fill slopes to an inclination of 2:1 or flatter, and include benching to reduce slope length on longer slopes.</p> <p>Direct concentrated flow to stabilized channels and drains.</p> <p>Roughen slope surfaces to slow down flow velocities and enhance water infiltration, which in turn will enhance vegetation establishment</p> <p>Divert stormwater away from denuded areas and use properly installed temporary berms, earth dikes, silt fences, sediment traps, inlet protection and sediment basins to limit the discharge of sediment and pollutants from the site.</p>
Soil Stabilization Practices	<p>The following methods typically apply to areas that are disturbed by grading and will not be redisturbed for a minimum of 21 days should be stabilized by the 14th day after the last disturbance:</p> <p>Use of a hydraulically applied bonded fiber matrix on slopes 3:1 or steeper</p> <p>Use of a 3-step straw mulch application on slopes 4:1 to 3:1</p> <p>Use of a one-step hydraulic mulch, seed, and binder application on slopes 4:1 or flatter</p>
Stormwater Management Controls	<p>Wherever possible, stormwater runoff from undeveloped areas should be kept separate from runoff from developed areas, and should be retained in natural conveyances or routed through properly lined drainage conveyances. Discharge locations should be provided with appropriate energy dissipation to prevent scour.</p>

4.1.1.4 New Activity Alternative

Impacts and mitigation from implementing this alternative would be similar to those described in Section 4.1.1.3.

4.1.1.5 Combined Alternative

Many actions that combine two or more alternatives would have impacts as described separately for each alternative component. In some cases, however, implementing two or more alternative components would cause cumulative impacts greater in magnitude, extent, or duration than the sum of the separate impacts. In such cases, the SEA would identify and evaluate these cumulative impacts.

4.1.2 Air Quality

4.1.2.1 No Action Alternative

Under the No Action Alternative, no impact on air quality due to construction or renovation would occur. However, fire risk in prone areas would remain high. Wildfires substantially increase levels of most criteria pollutants and many hazardous air pollutants. Probability of wildfires would be decreased by private landowners clearing vegetation from properties and public agencies implementing existing maintenance plans. Construction efforts to repair or replace fire-damaged structures would result in short-term, negligible increases in fugitive dust and vehicle emissions.

4.1.2.2 Low-Intensity Alternatives

Under this alternative, fire-safe demonstration areas would be constructed to provide educational centers for surrounding communities. Short-term impacts to air quality from construction activities include fugitive dust (PM_{10} and $PM_{2.5}$) emissions from soil disturbance and demolition, carbon monoxide and oxides of nitrogen, emissions resulting from fossil-fuel burning construction vehicles and equipment, and emissions of reactive organic gases (ROGs) and hazardous air pollutants from paints, thinners, and other solvents used at construction sites. Construction of roads associated with the project would also contribute to local fugitive dust levels. Some paving materials, such as cutback asphalt, have high ROG contents. The implementation of BMPs during construction would keep emissions to negligible levels. Examples of BMPs for construction activities include watering disturbed areas, maintaining and covering spoil piles, scheduling the siting of staging areas to minimize fugitive dust, and keeping construction vehicles tuned properly.

Permanent impacts from this alternative include the operation of fossil-fuel burning equipment in the education centers to provide heat and or hot water to the facilities. Fossil-fuel burning would produce emissions of all the criteria pollutants and some federal hazardous and state toxic air pollutants (hazardous air pollutants/toxic air pollutants). Emissions in carbon monoxide, oxides of nitrogen, ozone, and $PM_{2.5}$ would be produced from increased activity around the education center. Quantities of these pollutants would be negligible.

Based on the quantities of brochures, fliers, and videos likely to be produced for this alternative, negligible air quality impacts would result from production and distribution of these materials.

4.1.2.3 Improvement Alternative

With this alternative, existing fuelbreaks and fuel reduction zones would be expanded by removing or reducing vegetation in these areas. The use of prescribed burns would have a negative impact on air quality by increasing carbon monoxide, PM₁₀, PM_{2.5}, and ozone precursors (oxides of nitrogen and ROGs). The subgrantee would contact the local APCD and receive a permit prior to the use of this method. The use of mechanical vehicles and fuel-powered chainsaws to clear vegetation would also increase the pollutants of concern mentioned above; however, these impacts would be temporary and negligible. The application of herbicides could potentially increase emissions of ROGs and hazardous air pollutants/toxic air contaminants. Use of EPA-approved herbicides to manufacturer's specifications would result in negligible emissions.

4.1.2.4 New Activity Alternative

This alternative entails the creation of new fuelbreaks and fuel reduction zones. The impacts on air quality would be similar to those described in Section 4.1.2.3.

4.1.2.5 Combined Alternative

Many proposed projects may combine two or more of the alternatives described and evaluated previously. In most instances, the resulting impacts would be the addition of the impacts identified for the single alternatives. However, in some cases the cumulative impacts may be greater in magnitude, extent, or duration than the sum of the separate impacts. In such cases, the SEA would identify and evaluate these cumulative impacts.

4.1.3 Hydrology and Water Quality

4.1.3.1 No Action Alternative

Under this alternative, the fire hazard at the existing site would not change, and impacts to hydrology and water quality from threat of future fires would not be mitigated. Future fires would cause fire residue and unstable soils to wash into water bodies, potentially affecting water quality. Hydrology is not expected to be impacted as a result of taking no action.

4.1.3.2 Low-Intensity Alternative

This alternative comprises public information and education programs, which may include establishing a fire-safe demonstration area, or an education center, or distribution of brochures and videos. Based on the quantities of brochures, fliers, and videos likely to be produced for this alternative, negligible water quality impacts would be created by the distribution of brochures and videos.

Construction of a fire-safe demonstration area has the potential to cause increased runoff and sedimentation during construction and in the period between construction and vegetation re-establishment. This additional runoff and sedimentation would result from denuded slopes,

grading, and construction vehicle traffic at the site. Runoff and sedimentation could also be increased by stormwater carrying construction materials and wastes into waterbodies.

These impacts can be mitigated by implementing stormwater and erosion-control BMPs during construction. Typical construction BMPs are presented in Table 4-1. In general, construction BMPs include erosion- and sediment-control techniques to limit the exposure and transport of sediment, methods to minimize contact of stormwater with construction materials and wastes, proper vehicle maintenance and fueling practices, and minimizing off-site tracking of sediment. The subgrantee would ensure that necessary BMPs would be implemented to prevent impacts to water quality.

Because of the small scale associated with a fire-safe demonstration area, increased surface runoff would be negligible. No impacts to hydrology are expected as a result of this alternative.

4.1.3.3 Improvement Alternative

Improvement alternatives include expansion of existing fuelbreaks or fire reduction zones to remove low vegetation and reduce the density of mature trees. Typical management techniques include controlled or prescribed burns, use of mechanical equipment, hand treatments, grazing, or chemical treatments. These projects also often include revegetating these treatment areas with fire-resistant species. Expanding existing fuelbreaks or fire reduction zones has the potential to affect hydrology and water quality through increased surface runoff and erosion potential due to reduced vegetation and construction activities. Furthermore, vehicles have the potential to affect water quality by tracking sediment off site and through maintenance activities. Water quality has the potential to be impacted from animal waste and the application of herbicides.

The subgrantee would implement one or more of the following mitigation measures, as applicable, to minimize impacts to hydrology and water quality:

- Expansion of fuelbreaks in a blended mosaic fashion to integrate more densely vegetated areas with areas of thinned vegetation
- Implementation of construction BMPs as outlined in Table 4-1
- Designation of vehicle parking area on paved surfaces and established roads
- Management of grazing to minimize the number of animals required to control vegetative growth; use of alternate methods within 100 feet of water bodies prior to grazing in an area
- Use of herbicides approved by the EPA; application of chemicals using manufacturer's recommended methods and methods that minimize chemical use and runoff
- Revegetation of cleared areas with fire-resistant species

4.1.3.4 New Activity Alternative

Impacts and mitigation measures associated with creating new fuelbreaks or fuel reduction zones or conducting residential clearing would be similar to those described for the improvement alternative in Section 4.1.3.3.

4.1.3.5 Combined Alternative

The combined alternative consists of two or more of the Low-Intensity, Improvement, or New Activity Alternatives described above. Impacts and mitigation measures of the combined alternative are anticipated to be the same as those for its individual components. In some cases, however, implementing two or more alternative components would cause cumulative impacts greater in magnitude, extent, or duration than the sum of the separate impacts. In such cases, the SEA would identify these cumulative impacts.

4.1.4 Floodplain Management

4.1.4.1 No Action Alternative

The potential scenarios described for the No Action Alternative are not expected to result in direct or indirect impacts to the floodplain.

4.1.4.2 Low-Intensity Alternative

Under this alternative, public education projects, such as a fire-safe demonstration area described in Section 2.5.1.2, would be constructed. Structures would be built in compliance with EO 11988 and 44 CFR Part 9; therefore, a federally funded facility cannot be sited in a 100-year floodplain unless there are no reasonable alternatives. Except in these rare circumstances, there would be no impact to the floodplain. If a fire-safe demonstration area were constructed within a 100-year floodplain, the structure would be elevated or floodproofed in compliance with the NFIP and local floodplain ordinances. Structures floodproofed or elevated with fill or solid walls could block the flow of floodwaters and reduce the floodplain's storage capacity. For these projects, the subgrantee would conduct hydrology and hydraulics studies and submit these to FEMA to show that the construction does not increase the extent of the floodplain or the height of the BFE except on properties owned by the subgrantee for the purpose of retaining floodwaters. In compliance with 44 CFR Part 9, a notice would be publicly circulated explaining the project and reasons for the project being sited in the floodplain.

4.1.4.3 Improvement Alternative

This alternative involves expanding existing firebreaks and fuel management zones. Removal of vegetation is not expected to affect the floodplain. This alternative would comply with the NFIP, local floodplain ordinances, EO 11988, and 44 CFR Part 9.

4.1.4.4 New Activity Alternative

Impacts associated with the New Activity Alternative would be similar to those described in Section 4.1.4.3.

4.1.4.5 Combined Alternative

Many actions that combine two or more alternatives would have impacts as described separately for each alternative component. In some cases, however, implementing two or more alternative components would cause cumulative impacts greater in magnitude, extent, or duration than the

sum of the separate impacts. In such cases, the SEA would identify these cumulative impacts, if necessary.

4.1.5 *Biological Resources*

4.1.5.1 *No Action Alternative*

With the No Action Alternative, vegetation may be cleared by some property owners; however, coordinated vegetation management projects would not be implemented. Therefore, this alternative would have little or no direct impact on biological resources in the project area. Since funds would not be available to conduct vegetation management projects required to adequately reduce fire hazards the potential for future damage remains. If a fire were to occur at a future date due to the lack of vegetation management, it would result in the loss of existing vegetation within the area of the fire that would result in the direct loss of terrestrial wildlife habitat. Furthermore, indirect impacts would occur to aquatic resources as fire residue and unstable soils are washed into local streams and reservoirs. These indirect impacts associated with the loss of existing vegetation would continue until adequate vegetation has been reestablished within the burn area.

4.1.5.2 *Low-Intensity Alternative*

Activities associated with this alternative are primarily associated with public information and education and would have no impact on biological resources within the project area. Construction of a fire-safe demonstration area would involve the removal of vegetation within the footprint of the building. Vegetation management within the demonstration area would be expected to have minor adverse effects on biological resources in the immediate vicinity of the education center.

4.1.5.3 *Improvement Alternative*

Activities associated with this alternative include expanding fuelbreaks or fuel reduction zones. These vegetation management activities would not necessarily disturb the overall biology of an area since the vegetation thinning/removal would decrease the habitat for some species while increasing the habitat for others. These changes would be expected to be small when compared to the overall habitat in the general area. A reconnaissance-level field survey of lowland areas would be conducted to determine the presence or absence of jurisdictional wetlands. Impacts to wetlands would require mitigation at the federal, state, and local levels. In compliance with EO 11990, alternatives that affect wetlands would only be selected if no reasonable alternative exists. If a project would affect wetlands, the applicant would contact the USACE and local authorities to apply for and receive a Section 404 Permit for wetland activities. The applicant would mitigate damage to wetlands per the Section 404 Permit and otherwise comply with EO 11990.

Vegetation thinning/removal activities may impact sensitive plant populations in the project vicinity. Impacts from the ingress and egress of equipment and personnel would be reduced through the use of manual vegetation removal methods and low intensive mechanical methods,

when possible. Projects would be designed to avoid native plant species populations and individuals.

Projects under this alternative could eliminate individual mature native trees, such as oaks, which are often a resource of local concern. The following mitigation measures would be implemented to reduce or avoid impacts where possible: (1) identification of all native trees; (2) temporary fencing around the driplines of trees to be retained; (3) requirement that contractors avoid fenced areas; (4) minimization of soil compaction, paving, and trenching within native tree driplines; (5) avoidance of parking vehicles or staging equipment beneath native trees; and (6) restoration to preproject soil conditions by aerating soils after construction is complete, where soil compaction was necessary within native tree driplines. If native trees cannot be salvaged, compensation would occur in accordance with local mitigation guidelines.

Potential short-term impacts to wildlife species, such as displacement or mortality (death) of individuals, could also occur during thinning/removal activities. Displaced individuals may return following thinning/removal activities. Impacts may be further reduced by mitigation measures for threatened and endangered species, as described in Section 4.1.6.3.

Some biological communities are evolutionarily adapted to periodic fires, and many native species reproduce or forage most effectively several years after a fire. Fire-intolerant species have thrived in areas once dominated by fire-resistant and fire-tolerant species, thereby changing the species composition of the community (wildlife and vegetation), the nutrient distribution of the soil, and the spatial and canopy structure of the community. In this light, fire suppression techniques actually have a negative impact on these communities. Prescribed burns would have a beneficial impact on fire-tolerant species or biological communities by returning burned areas to more natural states.

Among other variables, the season and intensity of prescribed burns can greatly influence the fire's effect on individual species and biological communities. For example, conducting prescribed burns in summer or fall is less damaging to native plants and wildlife than in spring. Where possible, prescribed burns would be conducted to replicate historic fire patterns and to maximize eradication of non-native, highly flammable species while retaining native, fire-resistant species.

Invasive, non-native species have the potential to dominate areas cleared of vegetation. Therefore, subgrantees would be responsible for monitoring and maintaining fuel breaks and fuel management zones and continuing to treat these areas, as necessary. An alternative to periodic clearing is to plant native, fire-resistant species. Without proper maintenance, these areas could create an increased fire risk compared to preproject conditions.

Permits from the USACE would be required if any streams or other watercourses were impacted. Coordination with the USFWS, CDFG, and local authorities, and compliance with local statutes would be required.

4.1.5.4 New Activity Alternative

This alternative would consist of creating new fuelbreaks or fuel reduction zones or residential clearing projects. Impacts to biological resources would be the same as described in Section 4.1.5.3.

4.1.5.5 Combined Alternative

Many proposed projects may combine two or more of the alternatives described and evaluated previously. In most instances, the resulting impacts would be the combination of the impacts identified for the single alternatives. However, in some cases the cumulative impacts may be greater in magnitude than the sum of the separate impacts. In such cases, the SEA would identify these cumulative impacts.

4.1.6 Threatened and Endangered Species

4.1.6.1 No Action Alternative

With the No Action Alternative, vegetation may be cleared by some property owners; however, coordinated vegetation management projects would not be implemented. Therefore, this alternative would have little potential to directly impact proposed or listed threatened and endangered species in the project area. Since funds would not be available to conduct vegetation management projects required to adequately reduce fire hazards, the potential for future damage would remain. If a fire were to occur at a future date due to the lack of vegetation management, it could result in adverse impacts on proposed or listed threatened and endangered species through the loss of habitat within the burn area and/or mortality of individuals.

4.1.6.2 Low-Intensity Alternative

Activities associated with this alternative are primarily associated with public information and education and would have no direct impact on proposed or listed threatened and endangered species. Construction of a fire-safe demonstration area would disturb the area within the footprint of the building. The probability is low that the ingress and egress of equipment and personnel could adversely affect proposed or listed species present in the immediate vicinity of the building. Potential impacts would be short-term and may include disturbance/displacement of individuals, incidental disruption of suitable habitat, and mortality of individuals. This alternative would result in better and quicker response to future fires in the project area that would substantially reduce the amount of time required to bring a fire under control. Although impossible to quantify, potential benefits to proposed or listed threatened and endangered species range from minimal to extensive depending on the area and amount of habitat prevented from being burned by the better response and whether or not the species is tolerant to fire.

If an executed PBO exists for the disaster, adherence to stipulations in the PBO would ensure minimization of impacts to federally listed or proposed T&E species and compliance with the Endangered Species Act. If an executed PBO does not exist for the disaster, FEMA would determine, through site reconnaissance, database search, literature search, or informal consultation with USFWS, NMFS, CDFG, or other local experts, if the action has the potential to

affect federally listed or proposed T&E species. If federally listed or proposed T&E species have the potential to be impacted, FEMA would initiate consultation with USFWS or NMFS, in compliance with Section 7 of the Endangered Species Act. Potential impacts to federally listed or proposed T&E species would be evaluated and documented in an SEA.

Subgrantees would be responsible for enacting avoidance or mitigation measures to protect state-listed species. All SEAs would be submitted to CDFG to facilitate protection of state-listed species.

4.1.6.3 Improvement Alternative

Activities associated with this alternative include expanding fuelbreaks or fuel reduction zones. Prescribed burns, mechanized clearing, hand clearing, and other treatment methods have the potential to adversely affect T&E species and habitat. In addition, the ingress and egress of equipment and personnel could adversely affect proposed or listed threatened and endangered species in the immediate vicinity of the activities. Potential impacts to upland plant and wildlife species would be short-term and may include disturbance/displacement of individuals, incidental disruption of suitable habitat, and mortality of individuals. Potential impacts to habitat for protected aquatic species include increased sedimentation, turbidity, and pollution resulting from vegetation removal and herbicide application.

This alternative would result in better and quicker response to future fires in the project area that would substantially reduce the amount of time required to bring a fire under control. Although impossible to quantify, potential benefits to proposed or listed threatened and endangered species range from minimal to extensive depending on the area and amount of habitat prevented from being burned by the better response and whether or not the species is tolerant to fire.

If an executed PBO exists for the disaster, adherence to stipulations in the PBO would ensure minimization of impacts to federally listed or proposed T&E species and compliance with the Endangered Species Act. If an executed PBO does not exist for the disaster, FEMA would determine, through site reconnaissance, database search, literature search, or informal consultation with USFWS, NMFS, CDFG, or other local experts, if the action has the potential to affect federally listed or proposed T&E species. If federally listed or proposed T&E species have the potential to be impacted, FEMA would initiate consultation with USFWS or NMFS, in compliance with Section 7 of the Endangered Species Act. Potential impacts to federally listed or proposed T&E species would be evaluated and documented in an SEA.

Subgrantees would be responsible for enacting avoidance or mitigation measures to protect state-listed species. All SEAs would be submitted to CDFG to facilitate protection of state-listed species.

4.1.6.4 New Activity Alternative

Impacts and mitigation associated with this alternative would be similar to those described in Section 4.1.6.3.

4.1.6.5 Combined Alternative

Many proposed projects may combine two or more of the alternatives described and evaluated previously. In most instances, the resulting impacts would be the combination of the impacts identified for the single alternatives. However, in some cases the cumulative impacts may be greater in magnitude than the sum of the separate impacts. In such cases, the SEA would identify these cumulative impacts.

4.1.7 Cultural Resources

4.1.7.1 No Action Alternative

Under this alternative, FEMA would not fund any alternative action. If no federal funds were provided for specific actions, as is the case with the No Action Alternative, then no further cultural resources studies would be required under Section 106 of the NHPA or under the PA. However, under the No Action Alternative, the lack of facility relocations and construction or fire-reduction mitigation could result in potential impacts to historic properties from future fires.

If damaged by future fires, some structures would likely be demolished through private, local government, or state government undertakings, thus causing the loss of irreplaceable resources. Other structures would be repaired but without statutes or guidelines to ensure the work would be sensitive to the historic characteristics of the structure or its surroundings. If subsequent activities under the No Action Alternative do not include a federal role, then no consideration of the project's impact on historic structures would be required and buildings would likely be demolished or repaired before identification, evaluation, or treatment studies.

4.1.7.2 Low-Intensity Alternative

This alternative consists of public information and education, including the construction of a fire-safe demonstration project. Construction may impact cultural resources and would require evaluation pursuant to the PA executed for the disaster.

4.1.7.3 Improvement Alternative

Expansion of fuelbreaks and fuel reduction zones in this alternative could adversely impact cultural resources. Each proposed action would be evaluated pursuant to the PA regarding potential impacts to cultural resources.

4.1.7.4 New Activity Alternative

This alternative involves the creation of new fuelbreaks or fuel reduction zones or residential clearing projects. Under this alternative impacts may occur to historic properties or cultural resources that are listed on, or potentially eligible for, the NRHP. The PA would be implemented under this alternative, and any mitigation procedures would adhere to that document.

4.1.7.5 Combined Alternative

This alternative would potentially involve cumulative impacts that are greater than the sum of the separate impacts from one alternative. Under the PA, each of the alternatives selected under the

combination alternative would need to be evaluated regarding potential impacts to cultural resources. Cumulative impacts would be evaluated in the SEA, as appropriate.

4.1.8 Socioeconomics and Public Safety

4.1.8.1 No Action Alternative

Fire-prone areas would remain subject to potential damages from future wildfires, and risks to human safety would remain. Residences, businesses, and local governments would rely on insurance or other sources as compensation for property damage. The need to rebuild, repair, or relocate damaged structures, roads, or utilities would cause adverse financial impacts to residents, businesses, and governments that have no or inadequate insurance. Residents and local governments would expend funds for temporary facilities. The loss of sales due to infrastructure damage, migration of customers, and temporary closings for repairs or replacement of inventory would impact businesses. Similar impacts would occur to residents, businesses, and governments that were impacted by a historic, as opposed to a future, wildfire.

If a substantial number of residents and businesses are affected to a substantial degree, entire communities could feel the indirect economic consequences. Residents and businesses that suffered financial hardships from fire damage are likely to alter their purchasing habits by reducing expenditures, especially on nonessential goods and services. Residents and businesses that migrate out of the area would likely terminate financial transactions in the community. The profitability of businesses providing these goods and services would then decrease. Businesses that decline or fail would lay off employees, thus increasing unemployment. Failing businesses, reduced expenditures, and migration of residents would decrease local tax revenues and, therefore, either increase tax rates or decrease budgets for local governments' services.

Private contractors would receive economic benefits from repairing fire-damaged facilities under this alternative. Provided local companies would be used for labor and materials, some economic benefits would trickle down to other sectors of the community. Except for unusually large projects, however, these beneficial impacts would have a negligible effect on the local economy as a whole.

Because there is no federal action associated with this alternative, there is no requirement for EO 12898 compliance.

4.1.8.2 Low-Intensity Alternative

Existing public safety hazards and property damage would potentially be reduced by implementing this alternative because public information and education programs would decrease the risk of fire hazard and corresponding indirect impacts described in Section 4.1.8.1 through increased public awareness. Population would not be impacted because this alternative would not displace persons and business to other locations or attract new population to the project area. Housing resources would not be impacted because the population demand for these necessities would not increase with this alternative. This alternative is not expected to impact property values. Private contractors would receive economic benefits from construction of fire-safe demonstration areas;

however, impacts to the local economy as a whole would be negligible. Demographic and economic indicators for local residents would be studied to determine if a disproportionate number (defined as greater than 50 percent) of minority or low-income persons may be adversely affected by the alternative. Potential environmental justice impacts (per EO 12898) would be addressed in an SEA.

4.1.8.3 Improvement Alternative

The expansion of existing fuelbreaks or fuel reduction zones would decrease the hazard of wildfires and, thus, positively impact public safety and reduce property damage. This alternative would not impact population because it would not require the relocation of people or induce a large influx in population. Expanding fuelbreaks or fuel reduction zones would not create a need for new housing. This alternative would potentially impact property values if visual resources in the project area are affected or if noise levels are permanently increased. In cases where visual resources or noise are adversely affected in residential areas, the subgrantee would conduct an economic analysis to determine potential impacts to property values and the results would be documented in an SEA. The local economy would potentially be positively impacted if materials are purchased at local businesses and local contractors are hired. This alternative would potentially benefit the local landowners by reducing their home and business insurance rates due to reduced risk from fire in the project areas. Demographic and economic indicators for local residents would be studied to determine if a disproportionate number (defined as greater than 50 percent) of minority or low-income persons may be adversely affected by the alternative. Potential environmental justice impacts (per EO 12898) would be addressed in an SEA.

As stated in Section 4.1.5.3, subgrantees would be responsible for maintenance of fuelbreaks and fuel reduction zones. Unless projects are designed to require little long-term maintenance, subgrantees would incur a financial burden to pay the annual costs to maintain fuelbreaks and fuel reduction zones. Without proper maintenance, the threat of future fire could even be increased as a result of these projects, thus adversely impacting public safety and increasing property damage.

4.1.8.4 New Activity Alternative

The impacts of creating new fuelbreaks or fuel reduction zones or performing residential clearing are similar to those described in Section 4.1.8.3.

4.1.8.5 Combined Alternative

Many actions that combine two or more alternatives would have impacts as described separately for each alternative component. In some cases, however, implementing two or more alternative components would cause cumulative impacts greater in magnitude, extent, or duration than the sum of the separate impacts. In such cases, the SEA would identify these cumulative impacts, if necessary.

4.1.9 *Land Use and Zoning*

4.1.9.1 *No Action Alternative*

No change in land use and zoning would occur if this alternative were chosen. A fire hazard would remain at the project site.

4.1.9.2 *Low-Intensity Alternative*

The development and distribution of educational materials proposed under this alternative would not impact land use or zoning. For projects that include the construction of a fire-safe demonstration area, FEMA would review local zoning ordinances to determine if the proposed land use would be consistent with existing statutes. If the proposed use does not comply with local zoning ordinances, the subgrantee would seek a variance or an amendment to the zoning designation so that the proposed use complies.

4.1.9.3 *Improvement Alternative*

Expanding fuelbreaks or fuel reduction zones has a low potential to affect land uses because most land-use designations would not change as a result of removing a vegetation corridor or thinning a densely vegetated area. Nonetheless, FEMA would review local zoning ordinances to determine if the proposed land use would be consistent with existing statutes. If the proposed use does not comply with local zoning ordinances, the subgrantee would seek a variance or an amendment to the zoning designation so that the proposed use complies.

4.1.9.4 *New Activity Alternative*

Impacts from this alternative would be similar to those described in Section 4.1.9.3.

4.1.9.5 *Combined Alternative*

Projects that combine two or more alternatives would have impacts as described separately for each alternative component. If numerous alternatives were implemented than the cumulative impacts would need to be consistent with the local land-use plan and zoning ordinances.

4.1.10 *Public Services*

4.1.10.1 *No Action Alternative*

Under the No Action Alternative, vegetation management efforts for fire-hazard reduction would not be conducted, and fire-prone areas would remain vulnerable to future fires. Fire-prone facilities that provide public services, such as schools, police stations, gymnasiums, hospitals, and utilities, could sustain future damage from fires. In addition to the monetary cost of damage, future fires could compromise the ability of these services to perform their duties adequately. Impacts could include the temporary or permanent closure of schools, hospitals, police stations, and recreational facilities (including forests and parks), and the disabling of essential public utilities. Future fires may indirectly affect public services. For example, fire and police departments would be strained from participating in fire assistance efforts, and emergency medical

services could be delayed in accessing emergency sites or hospitals. Traffic congestion from building repair may delay fire assistance and emergency medical services. Except for catastrophic fires, changes to demographics and housing are not expected to affect communities' requirements for public services.

4.1.10.2 Low-Intensity Alternative

Under the Low-Intensity Alternative, public service facilities may be impacted by public education programs. Fire fighters may be asked to participate in educational seminars or demonstrations, which could be conducted at public facilities such as schools or fire stations. Participation in educational programs for fire-hazard reduction would not compromise the function of the public service facility. The construction of fire-safe demonstration areas may have a minor, short-term impacts on public services because of temporary street closures and other construction-related activities. The development and distribution of public information materials are not expected to impact public services.

4.1.10.3 Improvement Alternative

These improvements would benefit the public service facility by reducing the risk of future fire damage and the associated impacts described in Section 4.1.10.1. Expanding fuelbreaks or fire reduction zones could affect public services by causing the temporary closure of a public facility, road, or bridge. School buses, police vehicles, fire vehicles, and ambulances could be forced to take alternate routes or experience delays; however, these impacts are expected to be temporary. Potential impacts and mitigation would be documented in an SEA, if necessary.

More than other public services, recreational facilities have the potential to be impacted by this alternative, particularly by controlled burns. A park or forest could experience an extended closure to conduct a burn or mechanized clearing, and the natural beauty of the facility and its enjoyment for users could be damaged for many years after action is taken. Smoke from prescribed burns and noise from mechanical equipment could decrease a natural experience for recreational users who are not even in the immediate project vicinity. The subgrantee would be responsible for adequately notifying the public of vegetation management projects that have the potential to impact recreational users. Methods of notification could include posting fliers at information centers, trailheads, and restrooms of recreational areas and updating recorded telephone and radio information. With implementation of these mitigation measures, the benefits of decreasing the risk of future wildfires outweigh these impacts.

4.1.10.4 New Activity Alternative

Impacts and mitigation associated with this alternative are similar to those described in Section 4.1.10.3.

4.1.10.5 Combined Alternative

Many actions that combine two or more alternatives would have impacts as described separately for each alternative component. In some cases, however, implementing two or more alternative

components would cause cumulative impacts greater in magnitude, extent, or duration than the sum of the separate impacts. In such cases, the SEA would identify these cumulative impacts.

4.1.11 *Transportation*

4.1.11.1 No Action Alternative

Roads in and near high fire hazards would continue to be closed due to flames and smoke during future fire events. Closed roads would result in detours, potential delays, and potential congestion. The degree of congestion, delays, and detours would depend upon the location, magnitude, and extent of the fire. Additionally, roads would potentially be closed due to mudslides that commonly occur following loss of vegetation.

Road closures during fire events would also delay the movement of fire-fighting equipment and firemen into and out of the affected area, thus slowing attempts to control the fire.

4.1.11.2 Low-Intensity Alternative

The Low-Intensity Alternative for vegetation management consists primarily of public information and education. Impacts on transportation would be related to construction of education facilities (e.g., fire-safe demonstration area). Road closures, detours, and traffic delays and congestion would potentially occur during construction activities. These temporary impacts would be mitigated by the subgrantee coordinating detour routes and signs with appropriate local transportation planning agencies.

4.1.11.3 Improvement Alternative

Controlled burns, vegetation removal, and other vegetation management projects would cause congestion, delays, and possible detours from heavy equipment, where roads would be used to access areas scheduled for vegetation management. The degree of congestion, delays, and detours would depend upon the location and extent of project activities, but all impacts would be temporary. The subgrantee would coordinate detour routes and signs with appropriate transportation planning agencies.

4.1.11.4 New Activity Alternative

Impacts on transportation for this alternative would be the same as those described in Section 4.1.11.3.

4.1.11.5 Combined Alternative

Impacts on transportation would be similar to the impacts for each alternative alone. However, in some cases, implementing two or more alternative components would cause cumulative impacts greater in magnitude, extent, or duration than implementing either action singularly. In these cases, the SEA would identify these cumulative impacts.

4.1.12 *Noise*

4.1.12.1 *No Action Alternative*

Under the No Action Alternative, FEMA-funded vegetation management efforts for fire-hazard reduction would not be conducted and, therefore, would not generate noise. However, fire-prone areas would remain vulnerable to future fires, and efforts to repair public facilities damaged by fire would likely cause a temporary increase in noise levels. However, noise levels are expected to remain within the legal limits for repairs conducted by professionals.

4.1.12.2 *Low-Intensity Alternative*

Noise created from distribution of educational materials would be negligible. The construction and operation of a fire-safe demonstration area would comply with local ordinances pertaining to noise levels and hours of operation.

4.1.12.3 *Improvement Alternative*

The improvement of public facilities by implementing vegetation management, expanding fuelbreaks, and conducting controlled burning measures, is expected to generate temporary noise while improvements are being made. All construction activities would comply with local and state noise ordinances. To mitigate impacts to users of recreational areas, the subgrantee would be responsible for adequately notifying the public of vegetation management projects that have the potential to impact recreational users. Methods of notification could include posting fliers at information centers, trailheads, and restrooms of recreational areas and updating recorded telephone and radio information.

4.1.12.4 *New Activity Alternative*

Impacts and mitigation would be similar to those described for Section 4.1.12.3.

4.1.12.5 *Combined Alternative*

Many actions that combine two or more alternatives would have impacts as described separately for each alternative component. In some cases, however, implementing two or more alternative components would cause cumulative impacts greater in magnitude, extent, or duration than the sum of the separate impacts. In such cases, the SEA would identify these cumulative impacts.

4.1.13 *Hazardous Materials and Wastes*

4.1.13.1 *No Action Alternative*

Under the No Action Alternative, the constant risk of fire danger would not be altered. The existing high fire danger, and the compounding danger of hazardous materials and wastes being stored in fire-prone areas, would not be mitigated.

4.1.13.2 *Low-Intensity Alternative*

The acquisition of property and the construction of a fire-safe demonstration area have the potential to cause impacts from hazardous wastes or materials. FEMA would review historic uses

of properties to be acquired to determine the potential for hazardous wastes or materials to occur on site. If determined necessary, due to the potential presence of hazardous materials or wastes, the subgrantee would conduct a Phase I Environmental Site Assessment using the generally accepted standard approaches, such as the American Society of Testing and Materials E 1527, to determine whether any recognizable environmental conditions exist at or around the site. If hazardous materials or wastes were discovered, the applicant would avoid the contaminated site or FEMA and the applicant would coordinate with local, state, and federal agencies to determine the level of cleanup required. Contaminated sites would be cleaned to federal and state requirements before the property would be acquired by the subgrantee.

Construction activities would follow legal requirements for storage, handling, and use of hazardous materials and wastes.

4.1.13.3 Improvement Alternative

Conducting vegetation management projects described in Section 2.5.3 has little potential impact associated with hazardous materials and wastes. Activities, including chemical treatments, refueling, and use of fire-suppression materials, would follow legal requirements for storage, handling, and use of hazardous materials and wastes. Potential impacts resulting from use of herbicides or other chemical treatments would be evaluated and documented in an SEA.

4.1.13.4 New Activity Alternative

Impacts and mitigation associated with this alternative would be similar to those described in Section 4.1.13.3.

4.1.13.5 Combined Alternative

Many actions that combine two or more alternatives would have impacts as described separately for each alternative component. In some cases implementing two or more alternative components would cause cumulative impacts greater in magnitude, extent, or duration than the sum of the separate impacts. In such cases, the SEA would identify these cumulative impacts.

4.1.14 Visual Resources

4.1.14.1 No Action Alternative

Since the no action alternative includes the implementation of existing maintenance plans, visual resources along roadways, recreational areas, and residential areas would be impacted as they have historically. Should a fire disaster occur due to continued fire hazard, there is the potential for adverse impacts to visual resources.

4.1.14.2 Low-Intensity Alternative

The Low-Intensity Alternative for this type of project includes public information and education that would have little impact to visual resources of highways and residential or recreational areas. Should an educational center be constructed and landscaped using fire-resistant design, materials, and vegetation in a residential or recreational area, the visual resources of the surrounding area

would be impacted. If residents adopted the use of fire-resistant vegetation for local landscaping, the local character of the residential area may be slightly affected. In most cases, such impacts would be negligible; however, projects should be evaluated on a case-by-case basis using BLM guidelines. Any adverse impacts would be mitigated. Mitigation would be discussed in each project-specific SEA.

4.1.14.3 Improvement Alternative

The expansion of existing fuelbreaks or fuel reduction zones along highways, residential areas, and recreational areas has the potential to impact visual resources. A fuel reduction zone or shaded fuel break would have a lesser impact on visual resources than a fuelbreak because the former involves only the selective removal of understory vegetation. Implementation of a controlled burn would potentially reduce the visual quality and recreational experience of the highway resulting from the presence of highly visible blackened areas. Although this impact would decrease over time, the impact could be noticeable for several years. Blackened areas are more visible when viewed in the foreground as opposed to the background. Depending on the maintenance schedule of the fuelbreak or fuel reduction zone, the impact to visual resources may be short-term or permanent. Projects that include revegetation with native, fire-resistant species would yield long-term beneficial impacts to visual resources; while a poorly maintained project could cause permanent adverse impacts to visual resources if regrowth of invasive, non-native species dominate the cleared or burned area. FEMA would evaluate each project using FHWA, BLM, or another appropriate federal agency's guidelines. Should adverse impacts occur, they would be mitigated. Mitigation would be discussed in each project-specific SEA.

4.1.14.4 New Activity Alternative

The creation of new fuelbreaks or fuel reduction zones or residential clearing projects would be evaluated and mitigated as discussed in Section 4.1.14.3.

4.1.14.5 Combined Alternative

The combining alternative would be evaluated on a case-by-case basis following the FHWA and BLM guidelines. In some cases, the combined actions may have a greater impact than the sum of each action and require mitigation. Should adverse impacts occur, they would be mitigated. Mitigation would be discussed in each project-specific SEA.

4.2 Fire-Prone Buildings, Roads, and Utilities

4.2.1 Geology, Geohazards, and Soils

4.2.1.1 No Action Alternative

Impacts from taking no action are described in Section 4.1.1.1.

4.2.1.2 Low-Intensity Alternative

This alternative involves relocating damaged facilities to existing facilities. Demolition of existing facilities and minor modifications to existing facilities have the potential to cause short-term soil loss and erosion; however, these impacts would be minimized by following BMPs. Based on some local codes and standards, seismic upgrades may be required for facilities undergoing modifications, thereby creating a beneficial impact.

4.2.1.3 Improvement Alternative

Improving existing structures to reduce their vulnerability to fire has the potential to cause short-term soil loss and erosion; however, these impacts would be minimized by following BMPs. Furthermore, most improvements would be on building interiors, which would cause no impacts to soils. Based on some local codes and standards, seismic upgrades may be required for facilities undergoing improvements, thereby creating a beneficial impact. Although road improvements could increase erosion and soil loss, erosion-control measures would be followed to minimize these impacts.

4.2.1.4 New Activity Alternative

Demolition of facilities and construction of replacement facilities would impact soils and geology as described in Section 4.1.1.2. Mitigation measures described in Section 4.1.1.2 would be followed.

4.2.1.5 Combined Alternative

As described in Section 4.1.1.5, an SEA would document cumulative impacts, if necessary.

4.2.2 Air Quality

4.2.2.1 No Action Alternative

Impacts from taking no action are described in Section 4.1.2.1.

4.2.2.2 Low-Intensity Activities

Components of this alternative may include demolishing existing structures, conducting vegetation management on existing sites, acquiring properties for the relocated structures, installing utilities, and constructing new structures. Impacts and mitigation for air quality would be similar to those described in Section 4.1.2.2; however, the potential exists for this alternative to have impacts greater in magnitude and duration than those described in Section 4.1.2.2. For all but large-scale projects, mitigation measures described in Section 4.1.2.2 would keep emissions to negligible levels. For large-scale projects, the subgrantee would contact the local APCD for permitting requirements.

4.2.2.3 Improvement Alternative

Under this alternative, minimal quantities of fugitive dust and vehicle emissions would be produced as a result of improving existing structures, similar to emissions described in Section

4.1.2.2. An increase in PM₁₀, PM_{2.5}, and possible precursors of ozone will be emitted during improvements to existing roadways. Appropriate mitigation measures discussed in Section 4.1.2.2 would be implemented by the subgrantee.

4.2.2.4 *New Activity Alternative*

Construction of buildings and construction of new roads to provide better access to fire-hazard areas would have the same impacts to air quality as those listed in Section 4.1.2.2.

4.2.2.5 *Combined Alternative*

As described in Section 4.1.2.5, an SEA would document cumulative impacts, if necessary.

4.2.3 *Hydrology and Water Quality*

4.2.3.1 *No Action Alternative*

Impacts from taking no action are described in Section 4.1.3.1.

4.2.3.2 *Low-Intensity Alternative*

This alternative may include relocating structures from high fire-hazard areas. Relocation activities may include demolition, vegetation management, acquisition of new property, installing utilities, and constructing new structures. Potential water quality impacts would result from stormwater contact with demolition debris, vegetation management practices, and increased runoff and erosion potential resulting from construction activities, as described in Section 4.1.3.2. These impacts could be mitigated through implementation of construction BMPs, as presented in Table 4-1 and Section 4.1.3.2, and mitigation measures outlined for vegetation management in Section 4.1.3.3.

4.2.3.3 *Improvement Alternative*

This alternative would include improving existing structures and facilities to reduce their vulnerability to fires. Typical projects may include replacing roofs or other building materials with fire-resistant materials or building techniques and improving roads in high fire-hazard areas. Potential water quality impacts may result from building retrofit projects as a result of stormwater contact with demolition debris and construction materials. These impacts can be mitigated through proper management of demolition debris and construction materials. Projects that include ground disturbance, such as road improvements and improvements to the exterior of buildings, may result in water quality impacts due to construction activities. These impacts can be mitigated by implementation of construction BMPs, as outlined in Table 4-1.

4.2.3.4 *New Activity Alternative*

This alternative would consist of constructing new buildings and facilities such as fire stations and roads to improve access to fire-hazard areas. A NPDES General Permit or a NPDES Stormwater Construction Permit may be required for new construction. The applicant should confer with the

RWQCB to determine permit requirements. Additional impacts and mitigation measures for new construction are the same as those described for the improvement alternative in Section 4.2.3.3.

4.2.3.5 Combined Alternative

As described in Section 4.1.3.5, an SEA would document cumulative impacts, if necessary.

4.2.4 Floodplain Management

4.2.4.1 No Action Alternative

Impacts associated with the No Action Alternative are described in Section 4.1.4.1.

4.2.4.2 Low-Intensity Alternative

Section 4.1.4.2 describes impacts that would result from this alternative.

4.2.4.3 Improvement Alternative

This alternative includes improving existing structures and facilities to reduce their vulnerability to fires. In general these fire-hazard reduction projects do not involve improvements outside the footprint of the existing structure. If these types of projects occur within the 100-year floodplain, the floodplain characteristics would not be changed. However, if the improvements are considered “substantial” (as defined by the NFIP regulations codified at 44 CFR Part 59), the subgrantee would ensure these measures are implemented as described in Section 4.1.4.2. This alternative would comply with the NFIP, local floodplain ordinances, EO 11988, and 44 CFR Part 9.

4.2.4.4 New Activity Alternative

This alternative involves relocating structures out of fire-prone areas or constructing new buildings such as fire stations and new fire roads. Impacts from these project components would be similar to those described in Section 4.1.4.2.

4.2.4.5 Combined Alternative

Impacts from this alternative would be similar to those described in Section 4.1.4.5.

4.2.5 Biological Resources

4.2.5.1 No Action Alternative

Impacts from taking no action are described in Section 4.1.5.1.

4.2.5.2 Low-Intensity Alternative

This alternative consists of relocating the function of facilities in existing structures with minor modification and demolishing fire-prone facilities. The demolition of fire-prone facilities would create a beneficial impact to biological resources by increasing the net acreage of native habitat, assuming that the relocated facility footprint is restored with native vegetation.

Potential short-term impacts to wildlife species, such as displacement or mortality of individuals, could occur during demolition and modification. Displaced individuals may return following construction. Impacts could be further reduced by mitigation measures implemented for threatened and endangered species as described in Section 4.1.6.3.

4.2.5.3 Improvement Alternative

This alternative would consist of improvements to existing structures and facilities to reduce their vulnerability to fires. These activities would not have an adverse affect on biological resources in the project area. In addition, this alternative would include improving roads in high fire-hazard areas to provide better access for fire-fighting personnel and equipment. In cases where the footprint of a road would be increased this activity would result in the disturbance of a limited amount of existing vegetation and the loss of associated wildlife habitat. This adverse impact is offset by the benefits associated with better response to fires that would substantially reduce the amount of vegetation and associated wildlife habitat lost while getting the fire under control. It is impossible to quantify the benefits that would be obtained but they can range from minimal to extensive depending on the size of fire that could be prevented and whether or not the species or biological community is tolerant to fire.

4.2.5.4 New Activity Alternative

This alternative includes construction of new buildings, such as a new fire station and the construction of new roads for better access to high fire-hazard areas. Disturbances associated with construction would cause impacts to a limited amount of vegetation and associated wildlife habitat. For projects that include relocating fire-prone structures, these impacts would be immediately offset by an increase in vegetation and habitat from demolishing existing buildings and revegetating with natural vegetation. In all cases the adverse impacts to existing vegetation and wildlife habitat associated with construction are more than offset by the benefits associated with better response to fires. This can substantially reduce the amount of vegetation and associated wildlife habitat lost while getting the fire under control. It is impossible to quantify the benefits that would be obtained but they can range from minimal to extensive depending on the size of fire that could be prevented and whether or not the species or biological community is tolerant to fire.

4.2.5.5 Combined Alternative

Impacts from this alternative would be similar to those described in Section 4.1.5.5.

4.2.6 Threatened and Endangered Species

4.2.6.1 No Action Alternative

Impacts from taking no action are described in Section 4.1.6.1.

4.2.6.2 *Low-Intensity Alternative*

This alternative consists of relocating the function of facilities in existing structures with minor modification and demolishing fire-prone facilities. Probability is low that the ingress and egress of equipment and personnel could adversely affect proposed or listed species present in the immediate vicinity of the building. Potential impacts would be short-term and may include disturbance/displacement of individuals, incidental disruption of suitable habitat, and mortality of individuals.

If an executed PBO exists for the disaster, adherence to stipulations in the PBO would ensure minimization of impacts to federally listed or proposed T&E species and compliance with the Endangered Species Act. If an executed PBO does not exist for the disaster, FEMA would determine, through site reconnaissance, database search, literature search, or informal consultation with USFWS, NMFS, CDFG, or other local experts, if the action has the potential to affect federally listed or proposed T&E species. If federally listed or proposed T&E species have the potential to be impacted, FEMA would initiate consultation with USFWS or NMFS, in compliance with Section 7 of the Endangered Species Act. Potential impacts to federally listed or proposed T&E species would be evaluated and documented in an SEA.

Subgrantees would be responsible for enacting avoidance or mitigation measures to protect state-listed species. All SEAs would be submitted to CDFG to facilitate protection of state-listed species.

4.2.6.3 *Improvement Alternative*

This alternative would consist of improvements to existing structures and facilities to reduce their vulnerability to fires. Because these activities would primarily occur indoors or on the exterior of existing facilities, no adverse affects are expected to proposed or listed threatened and endangered species that may occupy the project area.

This alternative would also include improving roads in high fire-hazard areas to provide better access for fire-fighting personnel and equipment. Improvements to existing roads would result in additional areas being disturbed. Soil erosion from road improvements could impact aquatic species through sedimentation and turbidity in water bodies. In addition, the ingress and egress of equipment and personnel could adversely affect proposed or listed threatened and endangered species in the immediate vicinity of the activities. Potential impacts would be short-term and may include disturbance/displacement of individuals, incidental disruption of suitable habitat, and mortality of individuals.

Improvements to existing roads would result in better and quicker response to future fires in the project area that would substantially reduce the amount of time required to control a fire. Although impossible to quantify, potential benefits to proposed or listed threatened and endangered species range from minimal to extensive depending on the area and amount of habitat prevented from being burned by the better response and whether or not the species is tolerant to fire.

If an executed PBO exists for the disaster, adherence to stipulations in the PBO would ensure minimization of impacts to federally listed or proposed T&E species and compliance with the Endangered Species Act. If an executed PBO does not exist for the disaster, FEMA would determine, through site reconnaissance, database search, literature search, or informal consultation with USFWS, NMFS, CDFG, or other local experts, if the action has the potential to affect federally listed or proposed T&E species. If federally listed or proposed T&E species have the potential to be impacted, FEMA would initiate consultation with USFWS or NMFS, in compliance with Section 7 of the Endangered Species Act. Potential impacts to federally listed or proposed T&E species would be evaluated and documented in an SEA.

Subgrantees would be responsible for enacting avoidance or mitigation measures to protect state-listed species. All SEAs would be submitted to CDFG to facilitate protection of state-listed species.

4.2.6.4 New Activity Alternative

This alternative includes construction of new buildings such as a new fire station and the construction of new roads for better access to high fire-hazard areas and the relocation of existing fire-prone facilities. These actions would result in the disturbance of the area within the footprint of the facility. Soil erosion from road construction could impact aquatic species through sedimentation and turbidity in water bodies.

In addition, the ingress and egress of equipment and personnel could adversely affect proposed or listed threatened and endangered species in the immediate vicinity of the activities. Potential impacts would be short-term and may include disturbance/displacement of individuals, incidental disruption of suitable habitat, and mortality of individuals.

Construction of roads and fire stations as a component of this alternative would cause a better and quicker response to future fires in the project area, which would substantially reduce the amount of time required to control a fire. Although impossible to quantify, potential benefits to proposed or listed threatened and endangered species range from minimal to extensive depending on the area and amount of habitat prevented from burning by the better response and whether or not the species is tolerant to fire.

If an executed PBO exists for the disaster, adherence to stipulations in the PBO would ensure minimization of impacts to federally listed or proposed T&E species and compliance with the Endangered Species Act. If an executed PBO does not exist for the disaster, FEMA would determine, through site reconnaissance, database search, literature search, or informal consultation with USFWS, NMFS, CDFG, or other local experts, if the action has the potential to affect federally listed or proposed T&E species. If federally listed or proposed T&E species have the potential to be impacted, FEMA would initiate consultation with USFWS or NMFS, in compliance with Section 7 of the Endangered Species Act. Potential impacts to federally listed or proposed T&E species would be evaluated and documented in an SEA.

Subgrantees would be responsible for enacting avoidance or mitigation measures to protect state-listed species. All SEAs would be submitted to CDFG to facilitate protection of state-listed species.

4.2.6.5 Combined Alternative

Impacts from this alternative would be similar to those described in Section 4.1.6.5.

4.2.7 Cultural Resources

4.2.7.1 No Action Alternative

Impacts under this alternative would be identical to those described in Section 4.1.7.1

4.2.7.2 Low-Intensity Alternative

No new construction would take place; however, minor modifications to existing structures and utility installation associated with relocation would require coordination with the SHPO and ACHP, pursuant to the PA. Additionally, if structures are demolished, or if damaged properties are acquired, documentation of any historic resources would be required under the PA.

4.2.7.3 Improvement Alternative

Under this alternative, improvements to and/or fireproofing of structures, roads, and utilities in high fire-hazard areas could adversely impact cultural resources. Each proposed action would be evaluated pursuant to the PA regarding potential impacts to cultural resources.

4.2.7.4 New Activity Alternative

Demolition of existing structures in high fire-hazard areas, new construction, development of the future location of fire-prone properties, and improvements to roads and utilities would require coordination with the SHPO and ACHP, pursuant to the PA.

4.2.7.5 Combined Alternative

Impacts from this alternative would be identical to those described in Section 4.1.7.5.

4.2.8 Socioeconomics and Public Safety

4.2.8.1 No Action Alternative

Impacts from taking no action would be identical to those described in Section 4.2.8.1.

4.2.8.2 Low-Intensity Alternative

The relocation of businesses and residences from a high fire-hazard area would decrease the potential for public health hazards and property damage from future fires. The indirect impacts described in Section 4.1.8.1 would be less likely to occur. Residents may require interim housing, and businesses would be impacted by loss of sales due to momentary closings; however, these temporary impacts would be mitigated in compliance with the Uniform Relocation Act and Chapter 16 of the California Government Code. The relocation of homes and businesses would

potentially impact population, demographics, housing, and businesses in extreme cases. If permanent impacts would occur, they would be evaluated and documented in an SEA. If relocation is proposed in areas where minority and low income households form more than 50 percent of the population, an SEA would examine and document the potential for disproportionate impacts on these groups in compliance with EO 12898.

4.2.8.3 *Improvement Alternative*

Improvements to existing structures and facilities would reduce the potential for fire-related losses to residents, business, and governments and the associated impacts described in Section 4.1.8.1. This alternative would not impact population, housing, or utilities because it would not displace persons or businesses for an extended period of time or attract new population to the project area. Increased fire safety of structures would raise property values. The closure of roads and utilities during improvements would temporarily impact users. The local economy, employment, and business would benefit from construction costs if materials and labor were purchased locally. Potential environmental justice impacts (per EO 12898) would be addressed in an SEA.

4.2.8.4 *New Activity Alternative*

Public safety hazards would decrease due to new fire facilities (i.e., fire stations) and fire access roads and relocated fire-prone structures. The indirect impacts described in Section 4.1.8.1 would be less likely to occur. Residents may require interim housing, and businesses would be impacted by loss of sales due to momentary closings; however, these temporary impacts would be mitigated in compliance with the Uniform Relocation Act and Chapter 16 of the California Government Code. If relocation is proposed in areas where minority and low income households form more than 50 percent of the population, an SEA would examine the potential for disproportionate impacts on these groups in compliance with EO 12898. The construction of new facilities and roads would potentially positively impact the local economy and businesses if local contractors are used and materials are purchased locally.

4.2.8.5 *Combined Alternative*

Impacts from this alternative would be identical to those described in Section 4.1.8.5.

4.2.9 *Land Use and Zoning*

4.2.9.1 *No Action Alternative*

Impacts from this alternative would be identical to those described in Section 4.1.9.1.

4.2.9.2 *Low-Intensity Alternative*

Detouring road users and providing utilities by alternate methods would not impact land use and zoning. Relocating the function of fire-prone facilities has the potential to impact existing land use and zoning. These impacts would be mitigated as described in Section 4.1.9.2.

4.2.9.3 *Improvement Alternative*

For road and utility improvement projects, this alternative would not impact land use or zoning. Buildings that currently comply with local zoning ordinances would not impact land use or zoning as a result of making improvements described in Section 2.5.2.3. However, improvements are generally prohibited for properties with nonconforming uses unless the structure is brought into compliance. A nonconforming use is one that is currently out of compliance with the zoning ordinance usually because the structure was built before the current zoning regulation was executed. In such cases, local governments would consider granting variances so that properties with nonconforming uses could be improved without making other structural changes necessary to comply with the zoning ordinance. Otherwise, the subgrantee would seek a variance or an amendment to the zoning designation so that the proposed use complies.

4.2.9.4 *New Activity Alternative*

Construction of new buildings, roads, and utilities would comply with local zoning ordinance. The zoning designation of fire-prone properties to be acquired would be changed to reflect the land use described in the corresponding deed restriction. Construction of buildings, roads, and utilities has the potential to impact land use and zoning; however, cities and counties with zoning ordinances would enforce these statutes on new development. If necessary, the subgrantee would seek a variance or an amendment to the zoning designation so that the proposed land use is in compliance.

4.2.9.5 *Combined Alternative*

Impacts from this alternative would be identical to those described in Section 4.1.9.5.

4.2.10 *Public Services*

4.2.10.1 *No Action Alternative*

Impacts from taking no action have been summarized in Section 4.1.10.1.

4.2.10.2 *Low-Intensity Alternative*

Relocating the function of fire-prone facilities to existing facilities would likely directly affect public services. Beneficial impacts would occur by reducing the risk of future fire damage to the relocated facility and associated impacts described in Section 4.1.10.1. This alternative may affect the response time of public services and their accessibility to residents. Relocation of schools, for instance, may require students having longer or shorter bus rides or students being bused instead of walking. The relocation of police and fire stations to existing facilities would likely affect average response times. Recreational and medical facilities would be closer to some users and more distant to others. Because utility service is not as dependent on proximity to users, no direct impacts would occur.

Frequently school functions are relocated to an operating school. Impacts from this project component could include increasing class size and school density, holding classes in trailers,

phasing classes or grades to share space, and integrating students from disparate grades. These impacts could adversely influence the educational experience for students.

Relocating high fire-hazard facilities could cause indirect impacts to public services. For example, a relocated school, hospital, or other facility with a substantial number of occupants could require changes to existing fire or police services and utility connections. Utilities would also require being removed from acquired property, including buildings with utility connections and roads that share easements with utility lines.

Because the potential impacts described for this alternative are site- and project-specific, general mitigation measures are not applicable. Individual projects would be evaluated for potential effects and mitigated appropriately. The results would be documented in an SEA, if appropriate.

4.2.10.3 Improvement Alternative

Under this alternative, existing public service facilities and utilities may be improved to reduce their vulnerability to fire. Improvements may include installation of fire detection and suppression systems or replacement of high fire-hazard building materials with fire-resistant materials. Overall, these improvements would benefit the public service facility by reducing the risk of future fire damage and associated impacts described in Section 4.1.10.1. However, installation of these improvements may temporarily cause closures, delays, or inconveniences for the public services users. The subgrantee would schedule improvements during underutilized periods so that disruption would be negligible. Mitigation measures to minimize impacts to public services would be included in an SEA, if appropriate.

4.2.10.4 New Activity Alternative

Demolishing fire-prone public facilities and building replacement facilities in nonfire-hazard areas would impact the users of associated public services. Beneficial impacts would occur by reducing the risk of future fire damage to the relocated facility and associated impacts described in Section 4.1.10.1. This alternative may affect the response time of public services and their accessibility to residents. Constructing new schools, for instance, would involve students having longer or shorter bus rides or students being bused instead of walking. Constructing new police and fire stations would likely affect average response times. Recreational and medical facilities would be closer to some users and more distant to others. Because utility service is not as dependent on proximity to users, no direct impacts would occur. Because the potential impacts described above are site- and project-specific, general mitigation measures are not applicable. Individual projects would be evaluated for potential effects and mitigated in an SEA, if appropriate.

Demolishing fire-prone residences, businesses, and governmental facilities and building replacement facilities out of the fire-prone areas may cause indirect impacts to public services. New structures would require utility extensions to the future site. Existing system capacities and utility use of the properties scheduled for construction would be evaluated to determine if additional service is required. Depending on the number and type of properties, number of occupants, and distance from the original location, other public services may be impacted. Specific projects would be evaluated for proximity and availability of public schools, response

times for police and fire protection services, proximity of recreational facilities, and proximity and availability of medical services. The results of this evaluation and required mitigation measures would be documented in an SEA, if appropriate. In addition to evaluating the need for new or increased service at the proposed construction site, projects would be evaluated for whether services could be decreased as a result of restricting future uses of the acquired properties. Utilities would be removed from acquired properties, including buildings with utility connections and roads that share easements with utility lines.

4.2.10.5 Combined Alternative

Impacts associated with this alternative would be identical to those described in Section 4.1.10.5.

4.2.11 Transportation

4.2.11.1 No Action Alternative

Impacts on transportation for this alternative would be similar to those described in Section 4.1.11.1.

4.2.11.2 Low-Intensity Alternative

Relocating the function of buildings to alternate structures has the potential to increase traffic volumes in the vicinity of the new and alternate structures. In consultation with local transportation planning agencies, FEMA would evaluate affected roads and public transportation routes to determine if existing roads and services would adequately handle the changes in traffic flow.

Detouring road users to alternate routes would also impact transportation networks. Affected roads and public transportation systems using these roads would be reviewed to determine if proposed detours could service increased users. Detour routes and signs would be coordinated with appropriate transportation planning agencies.

4.2.11.3 Improvement Alternative

With this alternative, most impacts on transportation would be temporary. Traffic in the location of improvement activities would potentially be delayed or congested due to movement of the heavy equipment needed for the construction activities. However, some long-term benefits would occur if roads in high fire-hazard areas were improved to provide better access for fire-fighting personnel and equipment. Road improvements would allow for better traffic flow during future fire events. Fire-fighting equipment and personnel would be able to reach the affected area more quickly and increase the likelihood that the fire would be controlled. By controlling the fire more quickly, transportation problems related to the fire would be resolved more quickly as well.

4.2.11.4 New Activity Alternative

Construction of new structures and demolition of fire-prone structures would cause congestion, delays, and possible detours from construction and demolition equipment. The degree of congestion, delays, and detours depends upon the location and extent of construction and

demolition. Impacts from these components would be temporary. The subgrantee would coordinate detour routes and signs with appropriate transportation planning agencies. Constructing new structures also has the potential to permanently affect traffic and transportation by creating a need for new or improved roads or public transportation services. Furthermore, existing roads and services may need to be altered based on the acquisition of fire-prone properties. Affected roads and public transportation systems would be reviewed to determine if existing roads and services would adequately handle the development of new structures and open-space uses.

Beneficial impacts associated with increased response and for fire fighters would occur as described in Section 4.2.11.3.

4.2.11.5 Combined Alternative

Impacts for this alternative are similar to those described in Section 4.1.11.5.

4.2.12 Noise

4.2.12.1 No Action Alternative

Impacts of taking no action are described in Section 4.1.12.1.

4.2.12.2 Low-Intensity Alternative

Minor modifications to existing structures and facilities conducted to relocate the function of fire-prone facilities would create temporary noise. Activities related to this alternative would comply with local ordinances pertaining to noise levels and hours of operation.

4.2.12.3 Improvement Alternative

Improvements to existing structures and facilities would create temporary noise. Many projects would create noise only indoors during periods of underutilization. Activities related to this alternative would comply with local ordinances pertaining to noise and hours of operation.

4.2.12.4 New Activity Alternative

Construction of new facilities would result in temporary noise from construction equipment. Demolition of structures on property acquired by FEMA would also create temporary noise. Noise generated by these sources would comply with local noise ordinances.

Construction of new roads or facilities may also introduce permanent noise sources, including automobile or pedestrian traffic. Because impacts from these changes depend on the land use at the properties involved, local noise ordinances would be reviewed for potential impacts caused by constructing noise-generating roads or facilities.

4.2.12.5 Combined Alternative

Impacts for this alternative are similar to those described in Section 4.1.12.5.

4.2.13 Hazardous Materials and Wastes

4.2.13.1 No Action Alternative

Impacts of taking no action are described in Section 4.1.13.1.

4.2.13.2 Low-Intensity Alternative

Demolition of fire-prone structures would have to be completed in compliance with the applicable California and federal regulations associated with asbestos and lead abatement and UST closures. Coordination with the appropriate AQMD, the SWRCB, and the EPA would be required as appropriate. If asbestos and lead are abated from the existing buildings, a beneficial impact would occur. Modifications to existing facilities to accommodate relocated functions of fire-prone facilities is not expected to result in impacts from hazardous waste and materials. Construction and demolition activities would follow legal requirements for storage, handling, and use of hazardous materials and wastes.

4.2.13.3 Improvement Alternative

Improvements to existing facilities are not expected to result in impacts from hazardous waste and materials. Construction and demolition activities would follow legal requirements for storage, handling, and use of hazardous materials and wastes, as described in Section 4.2.13.2.

4.2.13.4 New Activity Alternative

Acquisition and construction of facilities could affect hazardous materials and wastes and described in Section 4.1.13.2. Impacts and mitigation associated with demolition of fire-prone facilities would be similar to those described in Section 4.2.13.2.

4.2.13.5 Combined Alternative

Impacts from this alternative would be identical to those described in Section 4.1.13.5.

4.2.14 Visual Resources

4.2.14.1 No Action Alternative

Impacts resulting from taking no action are described in Section 4.1.14.1.

4.2.14.2 Low-Intensity Alternative

Relocating fire-prone facilities to existing facilities is not expected to cause impacts to visual resources because only minor modifications to the existing facilities would occur. Demolition and appropriate vegetation of the fire-prone facilities has the potential to impact visual resources. FEMA would evaluate projects on a case-by-case basis using BLM guidelines. Should adverse impacts occur, they would be mitigated. Mitigation would be discussed in each project-specific SEA, if appropriate.

4.2.14.3 Improvement Alternative

This action would have minimal impact on the visual resources unless the materials used are not consistent with the preexisting buildings and landscapes. Impacts to visual resources could potentially result from the improvement of roads to provide better access for fire-fighting personnel and equipment. If roads are widened, extensive clearing of vegetation could potentially impact the visual resources and the wider asphalt surface may change the visual compatibility of the road with the landscape. Projects should be evaluated on a case-by-case basis using FHWA, BLM, or other appropriate federal agency guidelines. Should adverse impacts occur, they would be mitigated. Mitigation would be discussed in each project-specific SEA, if appropriate.

4.2.14.4 New Activity Alternative

Impacts and mitigation associated with this alternative would be similar to those described in Section 4.2.14.3.

4.2.14.5 Combined Alternative

Impacts from this alternative would be identical to those described in Section 4.1.14.5.

4.3 Water Storage and Supply

4.3.1 Geology, Geohazards, and Soils

4.3.1.1 No Action Alternative

Impacts from taking no action are described in Section 4.1.1.1.

4.3.1.2 Low-Intensity Alternative

Impacts and mitigation from implementing public education programs are discussed in Section 4.1.1.2.

4.3.1.3 Improvement Alternative

Projects included in this alternative have the potential to cause temporary erosion and soil loss. Erosion control methods would be implemented to reduce these impacts to negligible levels. Impacts to geological resources and impacts from geohazards would be minimized by appropriate siting of facilities and by applying appropriate geotechnical construction. If improvements to water supply and storage systems would require the acquisition of agricultural land outside of incorporated city limits, FEMA would apply site assessment criteria and consult with the NRCS in compliance with the FPPA. Results of FPPA compliance would be documented in an SEA. To avoid potential impacts to unique geologic resources and designated mineral resource areas, local plans would be reviewed. Impacts to unique geologic resources and designated mineral resource areas would be discussed in an SEA, if necessary. Indirect impacts include short-term erosion from use of water as fire suppression; however, this impact is expected to be negligible compared to long-term erosion for areas subjected to wildfires.

4.3.1.4 New Activity Alternative

Section 4.3.1.3 also describes impacts and mitigation associated with the New Activity Alternative.

4.3.1.5 Combined Alternative

As described in Section 4.1.1.5, an SEA would document cumulative impacts, if necessary.

4.3.2 Air Quality

4.3.2.1 No Action Alternative

Impacts from taking no action are described in Section 4.1.2.1.

4.3.2.2 Low-Intensity Alternative

Impacts to air quality would be the same as described in Section 4.1.2.2.

4.3.2.3 Improvement Alternative

Extending existing fire hydrant lines or increasing the capacity of existing reservoirs or retention basins would cause impacts to air quality similar to construction impacts described in Section 4.1.2.2.

4.3.2.4 New Activity Alternative

Constructing water reservoirs or retention basins or installing water tanks or fire hydrant systems would create air quality impacts similar to construction impacts described in Section 4.1.2.2.

4.3.2.5 Combined Alternative

As described in Section 4.1.2.5, an SEA would document cumulative impacts, if necessary.

4.3.3 Hydrology and Water Quality

4.3.3.1 No Action Alternative

Impacts from taking no action are described in Section 4.1.3.1.

4.3.3.2 Low-Intensity Alternative

Impacts and mitigation from implementing public education programs are discussed in Section 4.1.1.2.

4.3.3.3 Improvement Alternative

This alternative would include improving existing structures and facilities to increase water availability for fires. Construction activities that include ground disturbance may result in increased runoff and erosion potential as well as other water quality impacts associated with material storage and equipment operations as described in Section 4.1.3.2. These impacts should be mitigated by implementation of construction BMPs as outlined in Table 4-1 and Section 4.1.3.2. Indirect impacts include short-term sedimentation from fire residue and unstable soils

washed into water bodies from fire suppression; however, this impact is expected to be negligible compared to long-term sedimentation for areas subjected to wildfires. Improvements to waterways that have the potential to impact hydrology and water quality would be evaluated and mitigated on a project-specific basis and documented in an SEA, as appropriate.

4.3.3.4 New Activity Alternative

This alternative would consist of constructing new water storage facilities such as water tanks, reservoirs, and retention basins to increase water availability for fires. Impacts and mitigation measures for new construction are similar to those described for the improvement alternative in Section 4.3.3.3.

4.3.3.5 Combined Alternative

Impacts from this alternative would be the same as those described in Section 4.1.3.5.

4.3.4 Floodplain Management

4.3.4.1 No Action Alternative

No Action Alternative impacts are described in Section 4.1.4.1.

4.3.4.2 Low-Intensity Alternative

Impacts described in Section 4.1.4.2 would be created by this alternative.

4.3.4.3 Improvement Alternative

This alternative would involve increasing water availability for fire fighting by extending a fire hydrant system or increasing the capacity of a reservoir or a retention basin. None of the projects considered in this alternative would affect floodplains except for expansion of reservoirs or retention basins in the 100-year floodplain. These actions have the potential to alter the extent and elevation of the floodplain and, in accordance with EO 11988, would not be permitted except in the absence of reasonable alternatives. Impacts could include an increase in the extent of the floodplain near the reservoir or retention basin and a decrease downstream of the reservoir or retention basin. Other floodplain characteristics, such as the BFE, are also expected to change. Land uses affected by the improved reservoir or retention basin would be evaluated for potential impacts and documented in an SEA, if appropriate. The subgrantee would provide FEMA with the required data to amend or revise the appropriate FIRM and revise the appropriate local zoning ordinance to reflect changes in the floodplain. Public notification would comply with EO 11988 and 44 CFR Part 9.

4.3.4.4 New Activity Alternative

Installing new water tanks, reservoirs, retention basins, or fire hydrant systems would have impacts and mitigation similar to those described in Section 4.3.4.3.

4.3.4.5 Combined Alternative

Impacts from this alternative would be identical to those described in Section 4.1.4.5.

4.3.5 Biological Resources

4.3.5.1 No Action Alternative

Impacts from taking no action are described in Section 4.1.5.1.

4.3.5.2 Low-Intensity Alternative

The description, potential impacts, and mitigation of this alternative are similar to those presented in Section 4.1.5.2.

4.3.5.3 Improvement Alternative

Potential improvements associated with this alternative consist primarily of improvements to existing structures and facilities to increase water availability for fire fighting. Improvement activities would be expected to cause disturbances in areas that had not been disturbed previously. These disturbances would result in the loss of a limited amount of vegetation and associated wildlife habitat. However, improvement in water supply and distribution would be expected to reduce the time that is presently required to bring a fire under control. Therefore, these adverse impacts on existing vegetation and wildlife habitat are offset by the benefits associated with better response to fires that can substantially reduce the amount of vegetation and associated wildlife habitat lost while controlling the fire. It is impossible to quantify the benefits but they can range from minimal to extensive depending on the size of the fire that could be prevented and whether or not the species or biological community is tolerant to fire.

4.3.5.4 New Activity Alternative

The installation of fire hydrant systems, water tanks, reservoirs, and retention basins would have similar impacts to biological resources as those described in Section 4.3.5.3.

4.3.5.5 Combined Alternative

Impacts from this alternative would be similar to those described in Section 4.1.5.5.

4.3.6 Threatened and Endangered Species

4.3.6.1 No Action Alternative

Impacts from taking no action are described in Section 4.1.6.1.

4.3.6.2 Low-Intensity Alternative

The description, potential impacts, and mitigation of this alternative are similar to those presented in Section 4.1.6.2.

4.3.6.3 Improvement Alternative

Potential improvements associated with this alternative consist primarily of improvements to existing structures and facilities to increase water availability for fire fighting. Improvement activities would be expected to cause disturbances in areas that had not been disturbed previously.

In addition, the ingress and egress of equipment and personnel could adversely affect proposed or listed threatened and endangered species in the immediate vicinity of the activities. Potential impacts would be short-term and may include disturbance/displacement of individuals, incidental disruption of suitable habitat, and mortality of individuals.

This alternative would result in better response to future fires in the project area that would substantially reduce the amount of time required to bring a fire under control. Although impossible to quantify, potential benefits to proposed or listed threatened and endangered species range from minimal to extensive depending on the area and amount of habitat prevented from being burned by the better response and whether or not the species is tolerant to fire.

If an executed PBO exists for the disaster, adherence to stipulations in the PBO would ensure minimization of impacts to federally listed or proposed T&E species and compliance with the Endangered Species Act. If an executed PBO does not exist for the disaster, FEMA would determine, through site reconnaissance, database search, literature search, or informal consultation with USFWS, NMFS, CDFG, or other local experts, if the action has the potential to affect federally listed or proposed T&E species. If federally listed or proposed T&E species have the potential to be impacted, FEMA would initiate consultation with USFWS or NMFS, in compliance with Section 7 of the Endangered Species Act. Potential impacts to federally listed or proposed T&E species would be evaluated and documented in an SEA.

Subgrantees would be responsible for enacting avoidance or mitigation measures to protect state-listed species. All SEAs would be submitted to CDFG to facilitate protection of state-listed species.

4.3.6.4 New Activity Alternative

This alternative includes the installation of fire hydrant systems and installation of water tanks, reservoirs, and retention basins. Construction activities associated with this alternative would create impacts and be mitigated as described in Section 4.3.6.3.

4.3.6.5 Combined Alternative

Impacts from this alternative would be similar to those described in Section 4.1.6.5.

4.3.7 Cultural Resources

4.3.7.1 No Action Alternative

Impacts under this alternative would be identical to those described in Section 4.1.7.1

4.3.7.2 Low-Intensity Alternative

This alternative would create impacts as described in Section 4.1.7.2.

4.3.7.3 *Improvement Alternative*

Under this alternative, improvements to existing water storage and supply facilities may impact significant cultural resources. Specific actions proposed under this alternative would be evaluated pursuant to the PA.

4.3.7.4 *New Activity Alternative*

Under this alternative, installation of new fire hydrant systems, water tanks, reservoirs, or retention basins would require evaluation pursuant to the PA.

4.3.7.5 *Combined Alternative*

Impacts from this alternative would be identical to those described in Section 4.1.7.5.

4.3.8 *Socioeconomics and Public Safety*

4.3.8.1 *No Action Alternative*

Section 4.1.8.1 describes impacts associated with taking no action.

4.3.8.2 *Low-Intensity Alternative*

Impacts associated with this alternative would be similar to those described in Section 4.1.8.2.

4.3.8.3 *Improvement Alternative*

Improving existing water storage and supply facilities and systems would reduce the potential for fire-related losses to residents, businesses, and governments and the indirect impacts described in Section 4.1.8.2. No other socioeconomic or public safety impacts are anticipated.

4.3.8.4 *New Activity Alternative*

Installation of new fire-fighting structures and systems would create impacts similar to those discussed in Section 4.3.8.3.

4.3.8.5 *Combined Alternative*

Impacts from this alternative would be identical to those described in Section 4.1.8.5.

4.3.9 *Land Use and Zoning*

4.3.9.1 *No Action Alternative*

Section 4.1.9.1 describes impacts from taking no action.

4.3.9.2 *Low-Intensity Alternative*

Impacts associated with this alternative are described in Section 4.1.9.2.

4.3.9.3 *Improvement Alternative*

Expansion or improvement to existing fire-fighting water equipment is not expected to alter land use or zoning. If necessary, mitigation would be conducted as discussed in Section 4.1.9.3.

4.3.9.4 New Activity Alternative

New water storage and supply facilities have little potential to affect land use or zoning; however, mitigation would be conducted as discussed in Section 4.1.9.3, if necessary.

4.3.9.5 Combined Alternative

Impacts from this alternative would be identical to those described in Section 4.1.9.5.

4.3.10 Public Services

4.3.10.1 No Action Alternative

Impacts from taking no action are described in Section 4.1.10.1.

4.3.10.2 Low-Intensity Alternative

Impacts and mitigation resulting from this alternative are described in Section 4.1.10.2.

4.3.10.3 Improvement Alternative

Impacts and mitigation would be similar to those described in Section 4.1.10.3.

4.3.10.4 New Activity Alternative

Impacts and mitigation would be similar to those described in Section 4.1.10.3.

4.3.10.5 Combined Alternative

Impacts from this alternative would be similar to those described in Section 4.1.10.5.

4.3.11 Transportation

4.3.11.1 No Action Alternative

Impacts would be identical to those described in Section 4.1.11.1.

4.3.11.2 Low-Intensity Alternative

Impacts would be identical to those described in Section 4.1.11.2

4.3.11.3 Improvement Alternative

Road closures, delays, and congestion would occur during construction activities. These impacts would be temporary and minor. The degree of congestion, delays, and detours would depend upon the location and extent of construction. The subgrantee would coordinate detour routes and signs with appropriate transportation planning agencies.

4.3.11.4 New Activity Alternative

Impacts and mitigation associated with this alternative would be similar to those described in Section 4.3.11.3.

4.3.11.5 Combined Alternative

Impacts from this alternative would be similar to those described in Section 4.1.11.5.

4.3.12 Noise

4.3.12.1 No Action Alternative

Impacts from taking no action are described in Section 4.1.12.1.

4.3.12.2 Low-Intensity Alternative

Section 4.1.12.2 discussed impacts and mitigation associated with this alternative.

4.3.12.3 Improvement Alternative

Under this alternative, existing water storage and supply systems may be improved or repaired, causing temporary noise while improvements are being made. All construction activities would comply with local noise ordinances. Mitigation measures described in Section 4.1.12.3 would be implemented in recreational areas.

4.3.12.4 New Activity Alternative

Impacts would be similar to those described in Section 4.3.12.3.

4.3.12.5 Combined Alternative

Impacts from this alternative would be similar to those described in Section 4.1.12.5.

4.3.13 Hazardous Materials and Wastes

4.3.13.1 No Action Alternative

Impacts of taking no action are described in Section 4.1.13.1.

4.3.13.2 Low-Intensity Alternative

Section 4.1.13.2 described the impacts and mitigation associated with this project.

4.3.13.3 Improvement Alternative

Projects proposed under this alternative are not expected to influence hazardous materials and wastes. Potential impacts exist for propitious that must be acquired; however, impacts would be mitigated as described in Section 4.1.13.2.

4.3.13.4 New Activity Alternative

Impacts and mitigation would be similar to those described in Section 4.3.13.3.

4.3.13.5 Combined Alternative

Impacts from this alternative would be similar to those described in Section 4.1.13.5.

4.3.14 Visual Resources

4.3.14.1 No Action Alternative

Impacts expected from taking no action are discussed in Section 4.1.14.1.

4.3.14.2 Low-Intensity Alternative

Section 4.1.14.2 described the impacts and mitigation associated with this project.

4.3.14.3 Improvement Alternative

The extension or installation of water lines for a fire hydrant system could have significant impacts on visual resources in residential or recreational areas. If water lines are installed in undeveloped areas, impacts to visual resources could include the clearing of vegetation and trenching to lay down the pipe resulting in the disruption of visual relationships among landscape components. These impacts would likely be short term until the area was revegetated. Components of this scenario are described in Section 4.1.14.2. Likewise, the construction of or alteration to increase the capacity of a reservoir or a retention basin used for fire suppression could have significant impacts to visual resources of the local landscape. The impacts of this action would be evaluated on a case-by-case basis following BLM guidelines. Should adverse impacts occur, they would be mitigated. Mitigation would be discussed in each project-specific SEA, if appropriate.

4.3.14.4 New Activity Alternative

This alternative for this type of project includes the installation of fire hydrant systems, water tanks, reservoirs, and retention basins. Impacts and mitigation associated with components of this scenario are described in Section 4.3.14.3.

4.3.14.5 Combined Alternative

Impacts from this alternative would be identical to those described in Section 4.1.14.5.

5 REFERENCES

- Air Resources Board (ARB). 1997a. Brochure (What the ARB Does).
<<http://www.arb.ca.gov/html/brochure/arb.htm>> Visited November 24.
- . 1997b. Proposed Amendments to the Area Designations for State Ambient Air Quality Standards, and Proposed Maps for the Area Designations for the State and National Ambient Air Quality Standards. November.
- Association of Bay Area Governments. 1981. Manual of Standards for Erosion and Sediment Controls.
- Bureau of Land Management (BLM). 1986. Visual Resource Contrast Rating. BLM Manual Handbook 8431-1.
- California Department of Conservation Farmland Mapping and Monitoring Program. 1994. A Guide to the Farmland Mapping and Monitoring Program. November.
- California Department of Resources Conservation. Undated. Erosion and Sediment Control Handbook.
- Campbell, C.J. and W. Green. 1968. Perpetual Succession of Stream-Channel Vegetation in a Semi-Arid Region. *Journal Arizona Academy of Science* 5:86-88.
- Federal Emergency Management Agency (FEMA). 1996. Environmental Impact Statement for Flood Recovery Activities in Albany, Georgia. Appendix D - Regulatory Guidance for Disposal of Hazardous Wastes.
- Federal Highway Administration (FHWA). 1981. Visual Impact Assessment for Highway Projects. March.
- Hart, Earl. 1992. Fault Rupture Hazard Zones in California. Division of Mines and Geology, Special Publication 42.
- Hornbeck, D. 1983. California Patterns: A Geographical and Historical Atlas. Mayfield Publishing: Palo Alto, California.
- Marvin, Cynthia. 1997. Air Pollution Specialist, Air Resources Board. Personal Communication with Erica McLean, PaRR. November 20.
- Popejoy, Debra. 1997. Air Pollution Specialist, Air Resources Board. Personal Communication with Erica McLean, PaRR. November 20.

- Preston, Terone. 1997. Air Resources Board, Compliance Division. Personal Communication with Erica McLean, PaRR.
- Skinner, M.W. and B.M. Pavlik. 1994. *Inventory of Rare and Endangered Vascular Plants in California*. 5th edition. Special Publication No. 1. California Native Plant Society.
- State of California. 1997. Health and Safety Code, Chapter 6.5 - Hazardous Waste Control. <[http:// www.leginfo.ca.gov/cgi/bin](http://www.leginfo.ca.gov/cgi/bin)>. Visited November 20.
- State Water Resources Control Board (SWRCB). 1997. Policies. <<http://www.swrcb.ca.gov/policies.htm>> Visited November 24.
- Steinhart, P. 1990. California's Wild Heritage: Threatened and Endangered Animals in the Golden State. Prepared for California Department of Fish and Game and California Academy of Sciences. Published by Sierra Club Books.
- U.S. Environmental Protection Agency (EPA). 1992. A Guide to Normal Demolition Practices Under the Asbestos NESHAP. EPA 340/1-92-013.
- . 1973. Processes and Methods to Control Pollution Resulting from All Construction Activity.
- Warner, R.E. 1979. California Riparian Study Program, Background Information and Proposed Study Design. Unpublished report. Prepared for California Department of Fish and Game, Sacramento, California.
- Water Education Foundation. 1997. California Water Map.
- White, Wayne and Diane Noda. 1997. Field Supervisors, U.S. Fish and Wildlife Service. Personal correspondence to Sandro Amaglio, FEMA Region IX Environmental Officer. Regarding Programmatic Formal Section 7 Consultation on FEMA-Funded Repairs for Disaster DR-1155-CA. September 30.

Appendix A: List of Acronyms and Abbreviations Used in the Programmatic Environmental Assessment

ACHP	Advisory Council on Historic Preservation
ACM	asbestos-containing material
Act	Robert T. Stafford Disaster Relief and Emergency Assistance Act (PL93-288)
APCD	Air Pollution Control District
AQMD	Air Quality Management District
ARB	Air Resources Board
BFE	base flood elevation
BLM	Bureau of Land Management
BMP	best management practice
CATEX	Categorical Exclusion
CATEXd	categorically excluded
CDFG	California Department of Fish and Game
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response Compensation and Liability Act of 1980
CFR	Code of Federal Regulations
CWA	Clean Water Act
DNL	Day-Night Average Sound Level
°F	degrees Fahrenheit
DTSC	California Department of Toxic Substances Control
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	U. S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FHBM	Flood Hazard Boundary map
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map

FONSI	Programmatic Finding of No Significant Impact
FPC	Formal Programmatic Consultation
FPPA	Farmland Protection Policy Act
HMGP	Hazard Mitigation Grant Program
LIM	Land Inventory and Monitoring
NCA	Noise Control Act of 1972
NEPA	National Environmental Policy Act of 1969
NESHAP	National Emissions Standard for Hazardous Air Pollutants
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act of 1966
NMFS	National Marine Fisheries Service
NPDES	National Pollution Discharge Elimination system
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
NSR	New Source Review
OES	California Office of Emergency Services
PA	Programmatic Agreement
PBO	Programmatic Biological Opinion
PEA	Programmatic Environmental Assessment
PITS	Programmatic Incidental Taking Statement
PM _{2.5}	particulate matter less than 2.5 micrometers in diameter
PM ₁₀	particulate matter less than 10 micrometers in diameter
PNP	private nonprofit organization
ROG	reactive organic gas
RWQCB	Regional Water Quality Control Board
SEA	Supplemental Environmental Assessment
SHPO	State Historic Preservation Officer
SWRCB	State Water Resources Control Board
T&E	threatened and endangered species
USACE	U. S. Army Corps of Engineers

USC	United States Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank